July/August 1992
Volume 19, Number 3

STEREO WORLD

National Stereoscopic Association

The Magazine of Stereo Photography

1930s Anaglyphs • Multimedia 3-D • Stuffed & Tinted

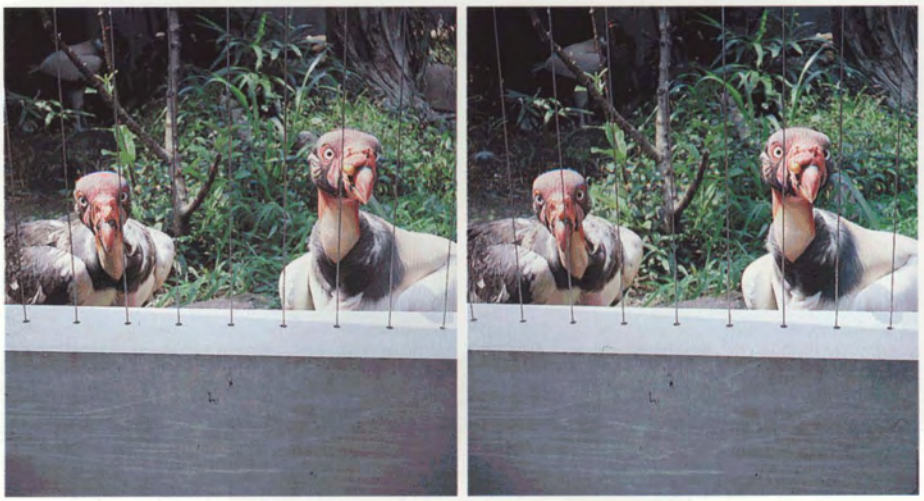
3D Assignment

More Selections in the "Animals" Assignment

Some truly delightful stereos have been arriving in response to our "Animals" assignment, making the selection of those for publication a difficult but pleasurable task. More will appear in the next issue from among those which arrived before the September 15, 1992 deadline.

Current Assignment: "Close-up"

By this we mean any stereograph taken at a proximity requiring a lens separation of *less* than the standard 2.5 inches. This could include anything from a table-top view made using a shift bar and a separation of 2 inches to a peek into a tiny flower using a 2mm shift. Nimslos with supplementary lenses or Macro Realist cameras are of course good here for images of live subjects. Microscopic stereos qualify here also, whether made with optical stereo microscopes, electron microscopes, of the latest scanning-tunneling systems. Winning views will be chosen on the basis of both technical quality and the extent to which the nature of the subject is uniquely revealed through close-up 3-D imaging. Deadline for "Close-up" is March 15, 1993. *(See complete rules on page 21)*



"King Vultures, Bronx Zoo" by Ted Papoulas of Brooklyn, NY was taken with a Realist 3.5 in July, 1991.

"Hi! Wanna Play?" is by E. Jack Swarthout of Paris, IL, who was tossed a soccer ball by this dolphin at Marineland, Florida in May, 1988. They played catch for about five minutes, and Jack shot this parting portrait with his Teco-Nimslo.

STEREO WORLD

Copyright ©1992 by the
National Stereoscopic Association

NSA Board of Directors

Andy Griscom
David Hutchison
Dieter Lorenz
Susan Pinsky
T.K. Treadwell
Paul Wing

NSA Officers

Gordon D. Hoffman, *President*
John Waldsmith, *Vice President, Activities*
John Weiler, *Secretary*
Larry Hess, *Recording Secretary*
David Wheeler, *Treasurer*

Stereo World Staff

John Dennis, *Editor*
Mark Willke, *Art Director*
Bob Waldsmith, *Subscription Manager*

National Stereoscopic Association
(Memberships, renewals, address changes, classified ads, display ads)
P.O. Box 14801
Columbus, OH 43214
(Stereo World back issues)
P.O. Box 398
Sycamore, OH 44882

Stereo World Editorial Office
(Letters to the editor, articles, calendar listings)
5610 SE 71st Ave.
Portland, OR 97206

"3-D Treasures" Editor
Ron Labbe
15 Anson St., Boston, MA 02130

"NewViews" Editor
David Starkman
P.O. Box 2368, Culver City, CA 90231

"The Unknowns" Editor
Neal Bullington
5880 London Dr., Traverse City, MI 49684

"View-Master" Editors
Wolfgang & Mary Ann Sell
3752 Broadview Dr., Cincinnati, OH 45208

Oliver Wendell Holmes Stereoscopic Research Library
Eastern College, St. Davids, PA 19087

Stereoscopic Society of America
E. Jack Swarthout, Membership Secretary
12 Woodmere Dr., Paris, IL 61944

Table of Contents

Volume 19, Number 3 July/August 1992

In This Issue

A Double-Tinted Tissue 3
The Anaglyphs of Dreyer & Wendt 4
by Dieter Lorenz
Invisible Sight: A Virtual Sho 10
by Harold R. Baize, Jr.
Leica 3-D Gold 16
by Jack Naylor
Stuffed & Tinted 22
by Del Phillips
3-D IMAX in California– The Last Buffalo 28
A Review by Robert Bloomberg
Shooting the Shooting: Robocop in 3-D 33
by Craig Busch
High Speed Stereo 36
by Franklin J. Flocks
Shooting Star / 3-D Safari 40
by Don Marren

Regular Features

Editor's View Comments and Observations, *by John Dennis* 2
The Society News from the Stereoscopic Society of America, *by Norman B. Patterson* . 20
NewViews Current Information on Stereo Today, *by David Starkman & John Dennis* ... 30
Calendar A Listing of Coming Events 47
Classified Buy, Sell, or Trade It Here 48

Color separation and preparation donated by
Wy'east Color Inc., Portland, Oregon.

Front Cover:

On location with a 70mm 3-D movie rig at Iceland's Vatnajokull Glacier, First Camera Assistant Perry Hoffman prepares to shoot an ice age sequence for the recently released film Shooting Star. *This is just one of many spectacular scenes in the new production, which combines them with a dramatic and informative story. Made for Ontario's Science North museum, the film includes 3-D laser projection. Don Marren's feature on* New Natural History Films With Drama And Depth *covers this film as well as the new European production* 3-D Safari.

Stereo World (ISSN 0191-4030) is published bimonthly by the National Stereoscopic Association, Inc., P.O. Box 14801, Columbus, OH 43214. All rights reserved. Material in this publication may not be reproduced without written permission of the NSA, Inc. Printed in USA. A subscription to *Stereo World* is included with NSA membership. **Annual membership dues:** $22 third class US, $32 first class U.S., $34 Canada and foreign surface, $48 international airmail. All memberships are based on the publishing year of *Stereo World*, which begins in March and ends with the January/February issue of the next year. All new memberships received will commence with the March/April issue of the current calendar year. When applying for membership, please advise us if you do not desire the back issues of the current volume.

Member, International Stereoscopic Union

COMMENTS AND OBSERVATIONS
by John Dennis

Editor's View

Our color issues have tended, partly by design and partly by chance, to alternate between an emphasis on vintage material and a concentration on contemporary topics. Following the features on tinted tissues and early lithographed stereos in the previous color issue, this one turns to look at current developments in 3-D film and multi-media productions, as well as high-speed flash stereos which turn out to be possible on a surprisingly low-tech budget.

For all their limitations, anaglyphs remain the easiest and cheapest way to publish large stereos for viewing by a mass audience. The feature on the work of Dreyer & Wendt in Germany fills in part of the still poorly documented history of anaglyphic printing. While the examples reproduced in the article fall far short of the best work being done in this format today, they represent some of the better anaglyphic efforts of their time and helped lead to filters and inks that now make some anaglyphs competitive with vectographs for ghost-free clarity and brightness.

Could the world's most valuable collectible camera be a *stereo* camera? We're talking about the "low six figures" here, and the answer, which can be found in the "Leica 3-D Gold" article, could depend on how you define things. Regardless of any potential price that would earn mention on network news, the camera in question is a thing of beauty rare enough to overcome the extravagance involved. Hidden in a cookie tin for many years, it only seemed right to share it, at least in print, with those who can most appreciate it.

Next: Retinal Reality Ray?

Predictions of those awkward looking Virtual Reality helmets someday becoming as common as walkman headphones may already have been wiped out by the speeding inertia of high-tech research. An article by Gregory Pope in the September '92 *Discover* (page 26) reveals that work is under way to refine a low-energy laser beam device which scans images directly onto the retina without the need for any screen or lenses. The virtual retinal display (VRD) could replace both ordinary TV and the VR helmet with a tiny laser projector/scanner in front of the eye or mounted in the earpiece of a pair of eyeglasses so that the beam could reflect off the inner surface of the lens. Stereoscopic imaging would be easy, as each eye would have its own scanner.

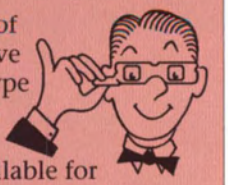
Safety isn't a concern, as the laser involved puts out less than a ten-millionth of a watt. The *real* safety issue could arise when people start walking into streets while their entire field of vision is devoted to a 3-D rock video! Actually, the images could be adjusted to degrees of transparency or area within the field of vision desired, for viewing tapes, interactive computer graphics, remote camera images, or transmitted TV programs. It's the sort of technology that could someday make *flat* images as much of an exception as stereo images are today, and it's both exciting and scary.

The NS–What?

The non-profit National Stereoscopic Association was founded in 1974 to promote the study and preservation of the stereoscopic images and equipment of the past and to encourage the growth of all aspects of stereoscopy in the present. Besides publishing the bimonthly *Stereo World*, The NSA hosts regional and national meetings featuring collector's trade fairs and 3-D projection programs.

If this issue of *Stereo World* is the first you've heard of the NSA, we invite you to write for more information. Send a SSAE to NSA, PO Box 14801, Columbus, OH 43214.

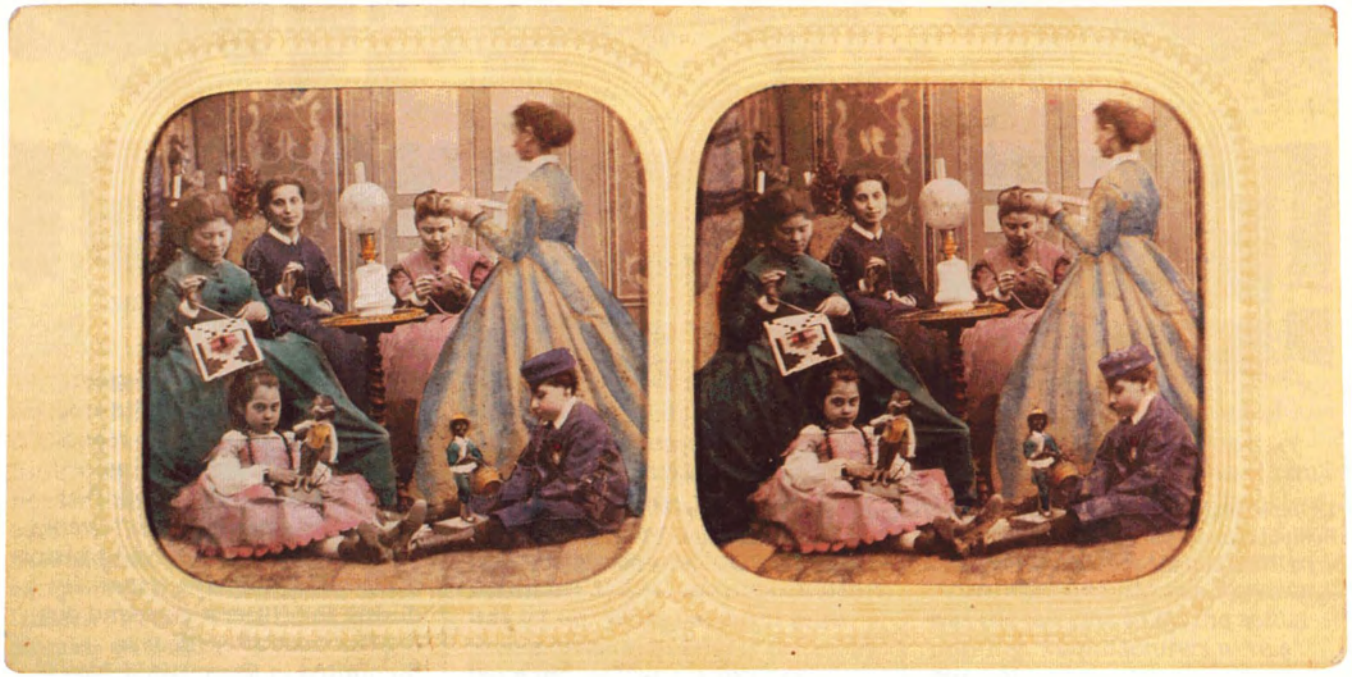
Viewing the World



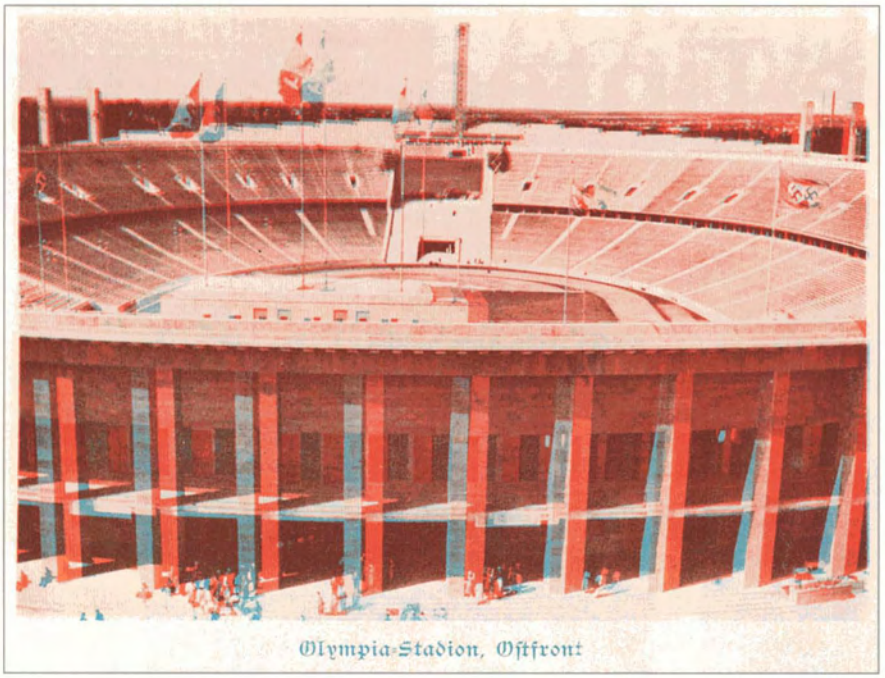
Two styles of inexpensive "lorgnette" type plastic stereoscopes are currently available for viewing the stereographs reproduced in *Stereo World*. There are also better quality glass–lensed viewers available, one of which is convertible for holding standard card views OR for easy viewing of pairs in books or magazines. For sources and prices (The NSA & *Stereo World* do not sell viewers) send a SASE to WORLD VIEWING, 5610 SE 71st, Portland, OR 97206. For tips on "free viewing" with no optical aid, send a separate SASE.

The respite of a much calmer sort of viewing is offered by the images of James Hurst in our article "Stuffed & Tinted". His dedication to perfection in every detail of taxidermy, exhibit design, and stereography makes his views a joy to study. In *The World of Stereographs* William Darrah observes, "No series is more justly famous" in his reference to Hurst. This was the height of natural history realism in the 1870s, when animal photography in the wild was still years away from film and lenses fast enough for sharp close-ups anything like Hurst could arrange in his studio. In a time when scientific study demanded that creatures be killed and stuffed, Hurst added the excitement provided by today's nature films through dramatic staging of animals being eaten - often including contrived expressions on the faces and unlikely combinations of animals in a scene, but always creating a stereograph to be admired, even 120 years later.

A Double-Tinted Tissue



As an interesting follow-up to his tinted tissue feature in the previous color issue (Mar./Apr. '91) Paul Wing has supplied this rare example of a tissue with tinting on both the back *and* front surfaces. When illuminated from the front, it looks much like any other tinted paper print with color applied to selected areas and highlights. But when illuminated from the rear, the colors not only intensify and actually *change*, but now cover every bit of the scene. Tissues tinted on the front are extremely rare, and this mint example (circa 1860-65) is probably French, the unknown publisher identified only by the initials L.B. at the center.



"Olympic Stadium, East Front" from the "Three-Dimensional Picture Album of the Olympic Games" published in 1936 by Max Wendt with stereographs by Ernst Schlumberger. Note that the stadium is empty, as all the views were taken after the actual games.

"Bismarck Monument" from Wendt's 1936 anaglyphic book "Three-Dimensional Picture Album of the Olympic Games" with views by Ernst Schlumberger.

This article first appeared in the 1990 edition of the Gutenberg-Jahrbuch *(Annual) and is used here with permission of the Gutenberg Society of Germany. Translation by Gerhard Stieglitz.*

The A

by Dieter Lorenz

A few years ago the magazine *Kultur & Technik* (Culture & Technology) published a report about the publishing house of Otto Schönstein [Raumbild-Verlag], which specialized in stereoscopic pictures and played a historically interesting role, especially during the Hitler regime and during the years after the war. [Reprinted in *Stereo World*, Nov./Dec. '85.] At about the same time, another company was active in the field of stereoscopy, a company connected with the names Erich Dreyer and Max Wendt. They were engaged in politically motivated themes similar to those that occupied Schönstein, but using a different procedure. While Schönstein was using "genuine" photographic prints and lens-stereoscopes for his "space illustrations", Dreyer and Wendt took advantage of the *anaglyphic* procedure.

The stereoscopic publishing house of Schönstein, however, was much more successful and much better known than Dreyer and Wendt's, but the latter made 3-D history in other ways.

The Company

In the beginning, there was no such publishing house, but simply a Berlin printshop under the name of Otto Dreyer (probably Erich Dreyer's father) since 1874. The shop was listed in the Berlin Directory of 1931 at Eylauer Street Number 3 (Southwest 61) advertising the good quality of its printed materials. Erich Dreyer was named as the owner. It seems they made forms and other printed matter for the authorities. According to the

naglyphs of Dreyer & Wendt

1935 Berlin Directory, the company had changed its name to Dreyer & Co., a book printing and publishing company at 59, York Street, not far from their previous address. They were to remain at that address until their dissolution, except for a temporary move to 47, Dirksen Street in 1944 due to the air raids on Berlin.

Max Wendt, a businessman who was married to Erich Dreyer's sister Wanda, joined the company as a new partner. It must have been his influence that led the company to take up stereoscopy, for shortly after he had joined the firm, the first three-dimensional book appeared in 1936: the stereoscopic album of the Olympic games edited and published by Max Wendt. At the same time the company started to produce anaglyphic postcards. In 1937, another two anaglyphic picture books were published. During the following year, *Mathematische Raumbilder* (Mathematical Spatial Pictures) was published, a collection of stereoscopic drawings concerning three-dimensional geometry. This publication is important because of its subject matter and its use of anaglyphs – particularly the improvements created for the anaglyphic process. The drawings and the anaglyphic printing technique set the publishing house on its future course, and were used again after 1945 by Max Wendt.

Following the Second World War and the destruction of Berlin, the city was divided into four sectors. Amazingly, as early as 1946, one year after the end of the war, publications from Dreyer & Wendt were again available. Small sheets and little booklets with prewar stereo pictures of German cities and travel pictures were joined by a collection of new, sketched three-dimensional pictures. On December 1, 1947, a new company was set up. What had been until then a division of Dreyer & Co., by the name of Plastoskop Three-Dimensional Pictures, became an independent company in Berlin under the name "Deutsche Plastoskop-Gesellschaft Wendt & Co. KG" (German Plastoskop Company Wendt & Co. KG).

This did not mean a separation from Erich Dreyer, for the firm of Dreyer & Co. was made a partner in the new firm, with limited responsibility. Similarly, Max Wendt remained a partner of Erich Dreyer. As a matter of fact, the new firm was set up because Wendt hoped he would be granted, in this way, a license or a permit for a publishing house by the American occupying forces. (The permit was finally granted, after a long struggle, on May 2, 1949.)

Executive secretary of the new firm was Mr. Walter Selle, an already well known expert in the field of stereoscopy, who had been working for Dreyer & Co. since 1946 as a "three-dimensional picture-technician." A branch office was registered in 1948 at Hamburg-Gross-Flottbeck under the name of Paul Wendt, a brother of the owner.

The main publishing emphasis was now placed on what were called *Mathematischen Plastoskop-Modellen* (Mathematical Plastoskop-Models) in the form of booklets.Of a total of twelve sections planned, only six were actually published. The little booklets mentioned above, with 3-D prewar city pictures, were supplemented by another two. Dreyer, however, was the last one to do the actual printing. Manufacturers were a number of printshops in West Berlin, East Berlin, Hamburg and Pinneberg.

Following the currency reform of 1948, Plastoskop Company sales went down rapidly. People just had no money. True, there were a few new editions and publications,

Anaglyphic Booklets of 1946-47 spanning the introduction of the independent "German Plastoskop-Company Wendt & Co. KG" and the simplification of the spelling from PLASTOREOSKOP to PLASTOSKOP.

including translations into Spanish that were sold to a distributor in Chile, but the sales figures were so low that the publishing house could no longer work profitably. In April 1954, Wendt canceled the registration of the company with the department of trade in Berlin. Max Wendt survived his company by a few years. He died in Berlin on May 19, 1962.

Dreyer & Co. KG existed until 1961, as shown by the trade register. It has not been possible to ascertain whether the Berlin Wall, dating from that year, determined the end of the company (Erich Dreyer lived in Rangsdorf, south of Berlin in the GDR, whereas the company was in West Berlin) or if he had died slightly earlier.

Anaglyphic Books and Postcards

The 1936 Berlin Olympics were the reason behind any publishing activity at all by Dreyer and Co. The first 3-D publication, the *Stereoscopic Album of the Olympic Games* was the most representative of them all. With its 160 pages, it was the largest, and due to its size, the most uncommon product of the publishing house. It was cloth-bound, measuring 15 by 27.5 cm with the inner book being only 21 cm wide. The remaining 6.5 cm were taken up by a cardboard container, glued to the front cover, for a very expensive pair of anaglyphic spectacles with frames of "artificial horn". The 75 full-page postcard size anaglyphic pictures were printed in red and blue-green as customary at the time. Most of the stereographs were by Ernst Schlumberger, one of the most active members of the German Society for Stereoscopy of that period.

"Mountain Top of the East Kampenwand" by Wilhelm Hofinger from his anaglyphic booklet "Our Alps in Three-Dimensional Pictures" published by Max Wendt.

But the views, with few exceptions, were not taken during the Olympic Games. They just showed the places where the games had taken place, as well as the Olympic village, the city of Berlin in its splendor during the Olympics, and Potsdam. At the end of the album there are two views of Nuremberg with a note that a Stereoscopic album of that city was in preparation – a statement that turned out not to be true. The anaglyphic views in the Olympics book could also be purchased individually, as postcards. Later, possibly in 1937, they were published again in booklets about the Reich-Sportfield and the Olympic village.

The second stereoscopic publication was quite a bit more modest. It was a brochure of 26 pages that showed Hitler and his staff during the Nuremberg Party meeting in 1936 on 23 anaglyphic plates with no photo credits given. The publisher had little luck with this brochure inasmuch as he must have interfered with the activities of Heinrich Hoffman, the "Reichsbildberichterstatter der NSDAP" (Reichs-Press-Photographer of the National Socialist Party) who had the monopoly for pictures of that kind. According to W. Selle, eventually the brochures in stock had to be destroyed. (Incidentally, The publishing house of Otto Schönstein offered a stereoscopic volume of the Nuremberg Party Meeting.)

This lack of success may have been the reason Max Wendt stopped dealing with such subjects and followed them up with a booklet by Wilhelm Hofinger with fifteen anaglyphic pictures under the title *Unsere Alpen im Raumbild* (Our Alps in Three-Dimensional Pictures). These pictures were mostly hyperstereos, but no aerial photographs. They brought out the wealth of mountain forms in a way that is not normally accessible to human eyes, due to their short base. The author was a teacher at the Bavarian State Institute for Photography in Munich and had been specializing for many years in stereoscopy in general, and hyperstereos in the mountains in particular.

In addition to these three volumes there were, during the thirties, several series of anaglyphic postcards brought out by Dreyer & Co. Besides the views from the Olympic Games Album mentioned before, there were series about Nuremberg, Würzburg, Lisbon, and Maderia. The pictures from foreign countries showed the destinations of trips by "Kraft durch Freude", the National Socialist Holiday Organization, and were sold mostly through that organization.

The first post-war edition, printed in 1946, consisted of eight postcard size sheets with anaglyph prints of prewar pictures from Berlin and one sheet with instructions on how to use them, all tied together in a wrapper. The title was not only in German but also in English, French and Russian; obviously with the intention of selling the package to members of the occupying forces in Berlin. In the same year and in 1947 and 1948, similar 16-page anaglyph booklets were published with other prewar city and travel pictures. It is true, however, that not all the advertised titles were actually published. Of a planned series of *Belehrende Plastoskop-Raumbilder* (Instructive Plastoskop Three-Dimensional Space Pictures), only one title was published.

None of these products matched the quality of prewar editions. They were typical products of that particular period before the currency reform took effect, badly printed on bad paper, unsuitable for halftone picture reproduction. (There's even a rumor that discarded paper was used for part of the above.) Therefore, it is not surprising that very little of these editions could be sold after the currency reform of 1948. As a matter of fact, only a few specimens of them have been preserved.

The *Anaglyphen Bildwerken* (Anaglyph Illustrations) that came out

after 1948 did not have a much better fate. There were two booklets, published in 1949, with the title *Zum Greifen nah* (Close Enough to be Touched) whose very concept must be called a mistake. The same is true of a volume titled *Das Skelettsystem* (The Skeletal System), planned to be part I of a series of "Anatomical Plastoskop Models". The latter was translated into Spanish and also published, but it remained the only title of the series. Wendt's last product was *Tiere im Zoo* (Animals at the Zoo) published in 1951, about 15 by 17 cm, with 24 anaglyphic pictures.

Max Wendt's interest in color anaglyphs should be mentioned, but that endeavor was not successful either. There were two series of four-color anaglyphic postcards, each of Berlin, printed for Film-Foto-Verlag (Film-Photo-Publisher) at Berlin-Tempelhof. There was also an enthusiastic prospectus by Wendt in which he recommended the use of his "Plasto-Color-Pictures" for publicity purposes, offering licenses for his patented process, and predicting that illustrated magazines were going to use Plasto-Color Pictures both in the editorial sections and the advertising sections.

The stereographs in illustrated publications before and after the war were mainly taken by amateur photographers, most of them members of the German Society for Stereoscopy. E. Schlumberger of Berlin led them all followed by Dr. H. Mader of Kulmbach. Others, during the postwar period (but frequently still working with prewar pictures) are E. Zitelmann, Berlin; Dr. W. Pietsch, Leipzig; Dr. von Lewe, Berlin; E. Schorner, Munich; and finally Max Wendt himself. The only professional photographers were W. Hofinger (*Our Alps in Three-Dimensional Pictures*) and W. Selle.

Anaglyph Drawings

The use of the anaglyph procedure for the production of stereoscopic drawings had been known for a long time when Erich Dreyer and Max Wendt started to work in this field. Wilhelm Rollmann, the inventor of this procedure, had described it originally in its application to stereoscopic drawings. As early as 1912, H. Vuibert in Paris had published his book entitled *Les Anaglyphes Géométriques*. Especially in the case of drawings, with their strong contrasts between line and paper background, the anaglyph method is handicapped even today by ghosting in the pictures. The problem is that the mutual "cancellation" of colors is not quite perfect. One sees, especially through the green filter, in most cases not only the picture printed in red, but also a weaker additional picture originating from the green picture. This may cause ghosting or even render fusion impossible.

German and Russian editions of "Mathematical Plastoreoskop-Models" Parts I-III, 1946.

In order to remedy this additional disturbing picture, Dr. Friedrich Stier of Berlin suggested, among other things, in a 1933 patent, to tint the picture background in a weak reddish color. The green lines of the anaglyph drawing were to be excluded from such shading. In other words, this toned down print now contained a negative picture of the green anaglyph lines. While in this way the contrast in the anaglyph picture became weaker – a fact that was quite acceptable – the ghosting was considerably reduced. In most cases it should be sufficient to do without the negative picture and place the green lines, too, directly on the reddish print underneath.

Dryer and Wendt jumped at this procedure and published a book in 1938 by O. Köhler, U. Graf and C. Calov under the title *Mathematische Raumbilder* (Mathematical Three-Dimensional Pictures) containing a collection of 24 anaglyphic images. The latter were printed in accordance with Stier's procedure. The stereoscopic drawings in the book are mainly 3-D representations of spherical geometry, including bodies and their intersecting curves and volumes, spherical triangles and curves on the terrestrial globe. An aerial hyperstereo view is compared with a sculpted relief model and with a map showing contour lines. A 3-D architectural drawing is also included. It seems that the authors and publishers filled a gap in the market with this book. The first edition – number of copies unknown – was soon sold out and a second edition had to be printed a few months later. By request of the authors, the rights to the book were transferred to L. Ehlermann, Publisher at Dresden, who published folders with single anaglyph sheets in 1938/39, and a third enlarged edition of the book in 1941. All this was still printed by Dreyer & Co.

The book and the illustrations were greatly improved in comparison to previously printed anaglyph

drawings and caused a number of books and magazine articles to be published with inserts of anaglyphic pages. Sometimes the latter were taken directly from the original book. Again, in most cases the printing was done by Dreyer & Co, as far as is known.

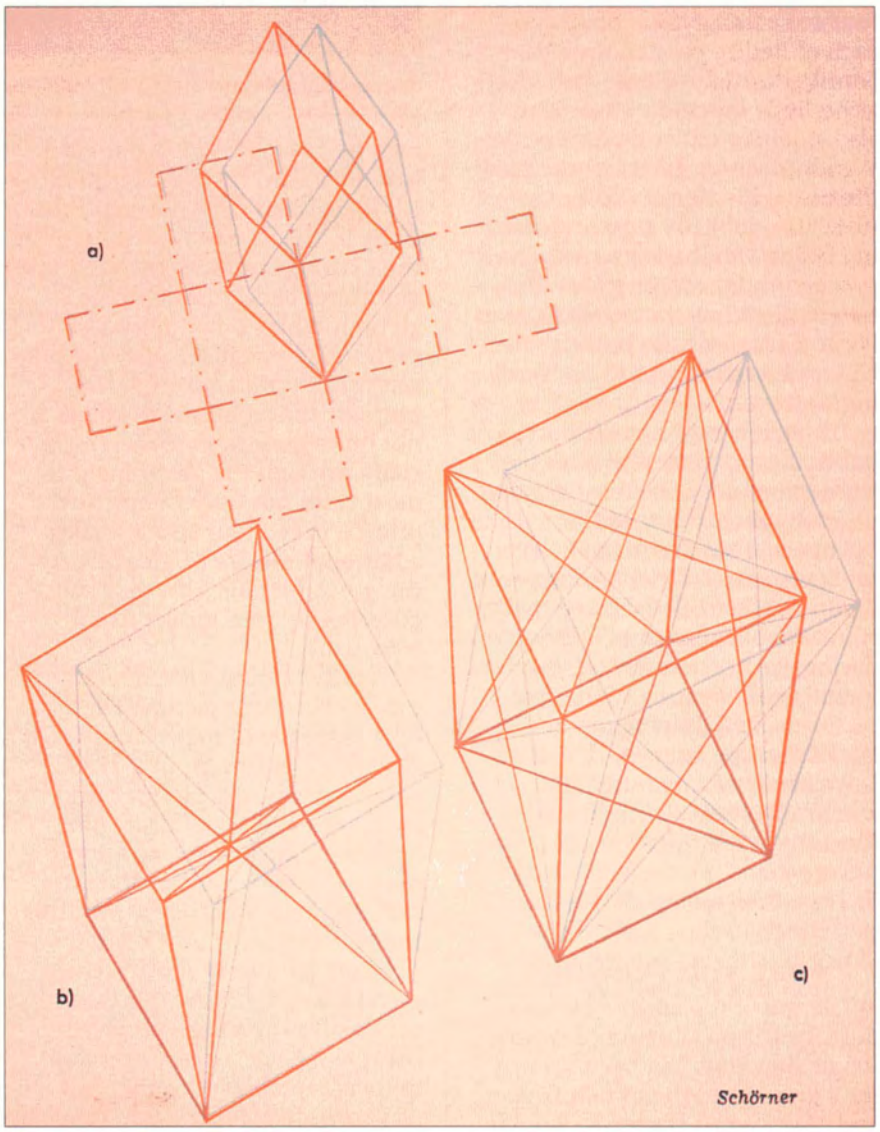
After the war, Max Wendt hired Ernst Schörner to produce new stereoscopic drawings for him. Schörner had succeeded Curt Calov at the Department of the Air Force in Berlin in 1941 following the latter's death. As Calov before him, Schörner worked on stereoscopic drawings for the air force and in his free time made stereo drawings of spherical geometry subjects similar to those in the book by Köhler, Graf and Calov. Those drawings were to be published by Ferdinand Hirt at Breslau, but the plan was upset by the war and the original drawings were destroyed by fire shortly before the end of the war. This meant that Schörner had to start all over again. Unlike Calov, Schörner did not use various viewing angles and distances, but only one single, firm viewing position, which is the only way for three-dimensional pictures to appear undistorted. His program was much more comprehensive than Calov's. There was a plan for a total of 12 sections with 14 models each on anaglyph tables under the title *Mathematische Plastoskop-Modelle* (Mathematical Plastoskop Models).

The first three sections were published by Dreyer & Co. in 1946, specifically in a portfolio with 3 folders, each of which contained 14 anaglyphs on single sheets. At that time, they were still called "Plastoreoskop" Models, an unpleasant word combination that originated with Max Wendt and which had also been used in "Plastoreoskop-Publishing House." Thanks to E. Schörner, the term was changed to "Plastoskop" Models. The printing procedure was changed as compared to the editions before 1945, inasmuch as the negatives on the toned down background were eliminated.

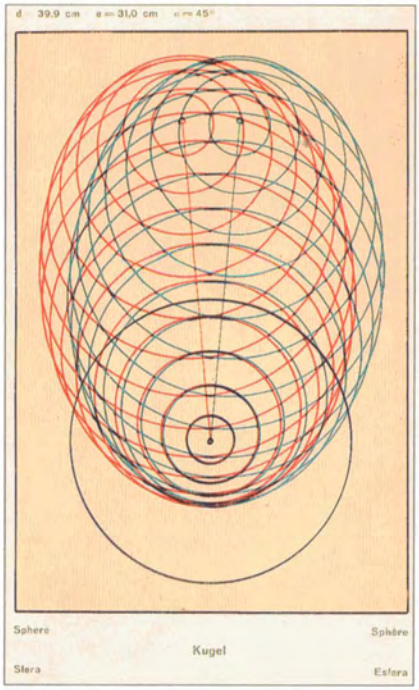
This first edition was also published in Russian. Dreyer & Co. also had an address in the East Sector of Berlin at 11, Warschauer Street. One thousand copies were delivered to the Soviet Military Mission at Berlin-Karlshorst, who felt obligated to assign paper for future printing – a support that was very welcome at the time.

With these new mathematical 3-D pictures, a product of interest to many customers had again hit the market. As early as 1947 a new edition of Sections I-III was published. Three booklets by Max Wendt appeared in 1948 followed by Section IV. In 1949 a 48-page commentary for Sections I-IV appeared, and in 1950 Sections VII and VIII were published along with Spanish translations of Sections I to IV. Reprints of some booklets also appeared in 1948 and 1950.

But then the publishing house was financially exhausted, so that Sections V and VI could no longer be published. The Plastoskop models announced in 1948 concerning the fields of optics and nuclear physics and others concerning the geometrical bases for the construction of stereo pictures could no longer be published either. Of the mathematical Plastoskop models, a total of 85,000 booklets, including the foreign language editions, had been sold according to Max Wendt. One of the booklets planned at that time resulted, many years later, in a book that employed the anaglyph printing technique used by Dreyer and Wendt which ran through several editions.



"Net-, Space- and Plane-Diagonals of the Cube" from page 4 of "Mathematical Plastoskop Models", Part I of the postwar anaglyphic drawing series by Ernst Schörner.



"Globe" from page 1 of "Mathematical Three-Dimensional Pictures" by Curt Calov, 1938.

Italian anaglyphic postage stamps issued in 1956 celebrating Italy's entry into the United Nations, based on Curt Calov's 1938 stereo drawing.

An Anaglyphic Stamp of Approval

In 1956 Max Wendt had what might be called his last success. In accordance with a suggestion by Wendt, the Italian Postmaster General issued two anaglyphic stamps on December 29, 1956, celebrating Italy's entry into the United nations: one 25 Lire stamp and one 60 Lire stamp. The design was by C. Donati, based upon Calov's stereo-drawing of a globe. The continental outlines of Europe, Africa etc. were drawn into it, but obviously not by a draftsman familiar with stereoscopy, for in the 3-D pictures these features don't appear on the surface of the globe, but inside!

Ernst Schörner, to whom Wendt owed his real success, later published other anaglyph drawings in other publishing houses. These publications, at least in one case, were pirated by China. Schörner had followers, of course, who developed his ideas and those of his predecessors. The anaglyph printing method was drastically improved during the sixties and seventies by the work of Rudolf Burkhardt, so that the background shading introduced by Stier could be eliminated while still improving the result. Unfortunately, there are very few printers today who have a real command of that method and consequently it is rarely used.

How can the true significance of Dreyer and Wendt be judged, and a detailed discussion justified? A comparison of the firms of Dreyer & Co. and Wendt & Co. with their competitor Otto Schönstein may be useful. Both had started their publishing activity at about the same time: Schönstein in 1935 and Dreyer in 1936. Both started to handle similar subjects, in keeping with the political situation at that time.

For instance, both published volumes about the Olympic Games of 1936 and the National Socialist Party Rally of the same year. It seems that Schönstein was the more successful one with his 3-D pictures. Obviously, he had better contacts, due to his partnership with Heinrich Hoffman. But then, he also had a better technique for the reproduction of stereo photographs, for he did attach to his volumes original photo-prints and a lens stereoscope. That was, of course, more expensive than anaglyph printing. The price of Schönstein's volume, with spectacles, was 18 Reichsmark, a stiff price at the time. Wendt's anaglyph album, on the other hand, was available for 6 Reichsmark. But the quality of stereo photos looked at through lenses was much better than anaglyphs looked at through color filters. That is, in all probability, the reason for the lack of success of the anaglyph picture books.

It's a different story for the mathematical spatial illustrations, where esthetics are much less important. That's why Dreyer and Wendt could be successful in this field. They were also the first to print anaglyph drawings in acceptable quality and in larger quantities, and the first to recognize that the anaglyph method was exactly the right thing for this kind of image. Otto Schönstein also recognized this advantage of anaglyphs, and planned an anaglyphic geometry book, but it was near the end of his career and too late for him to realize that plan.

While researching this article, the author received so much help and support that he cannot possibly list everybody concerned. However, there are two names he would like to mention: those of Ernst Schörner and Walter Selle; for without the help of these two men who were themselves part of the history of the two publishing houses of Dreyer and Wendt, this monograph could not have been written. To them in particular, besides all the others, goes the author's gratitude. [An extensive bibliography of publications by Dreyer and Wendt is available, in German, by sending a large SSAE with three first class stamps to: D&W List, 5610 SE 71st, Portland, OR 97206.]

It's another avant garde art performance in San Francisco. The audience enters a rather plain looking office building near Civic Center and is ushered up a flight of stairs, entering a large room where images of electric wiring are projected onto white vaulted church walls. The effect produces a sinuous interplay of form and color. A wall of ornate arched church walls forms the back of the theater and a 60 by 40 foot screen covers the front. The audience has entered a theater of illusion where the distinction between solid form

George Coates' Excursi

A Review

In *Invisible Site: A Virtual Sho*, San Francisco multimedia theater artist and "techno-wizard" George Coates employed an arsenal of sophisticated, novel techniques – the use of computer animated images interactive with live performers, for example – to create a visual experience of often startling beauty and unsurpassed technical virtuosity. The totality of *Invisible Site* was experienced in 3-D by the audience, which donned polarizing glasses (Manufactured and donated by Theatric Support, Studio City, California") for the occasion. As produced by George Coates Performance Works, *Invisible Site* – which previewed in December, 1991 and officially opened on January 22, 1992 – certainly represents a high water mark in the fusion of *avant garde* performance art and hi-tech imagery.

Prior to the performance, audience members accustomed themselves to the glasses by contemplating the immense image of an odd, rectangular shape protruding outward from a gigantic silver screen. (In reality, the "shape" was a piece of the sculpture in Embar-

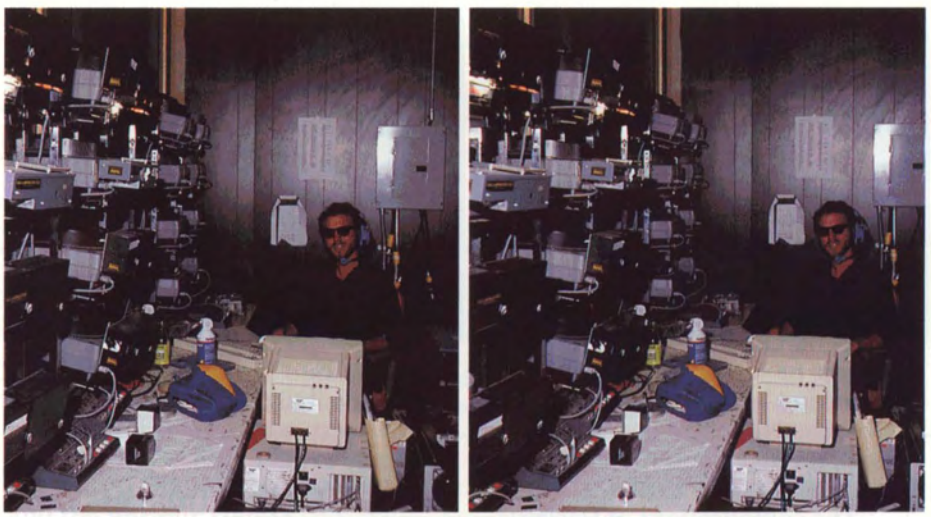
Invisible Site: A Virtual Sho

by Harold R. Baize, Jr.

and projected image is lost and "real" objects merge seamlessly with digital creations.

Audience members slip on their polarized glasses and find that the front of the theater now contains a very large and very solid square pipe. Later music swells and the actors appear. The principle characters are adventurers in a Virtual Reality network. When they put on their stereoscopic eyephone helmets the audience joins them in a three dimensional excursion through a world populated by computer generated environments that include human forms, large floating eyes, and giant spiders.

As a result of portraying virtual reality, some actors have two iden-



Sixteen computer controlled Kodak Ektagraphic projectors provide the changing 3-D sets for the performance. Jeff Stringer, seated at the controls with headset firmly attached, is the visual coordinator. All stereographs by the author except as noted.

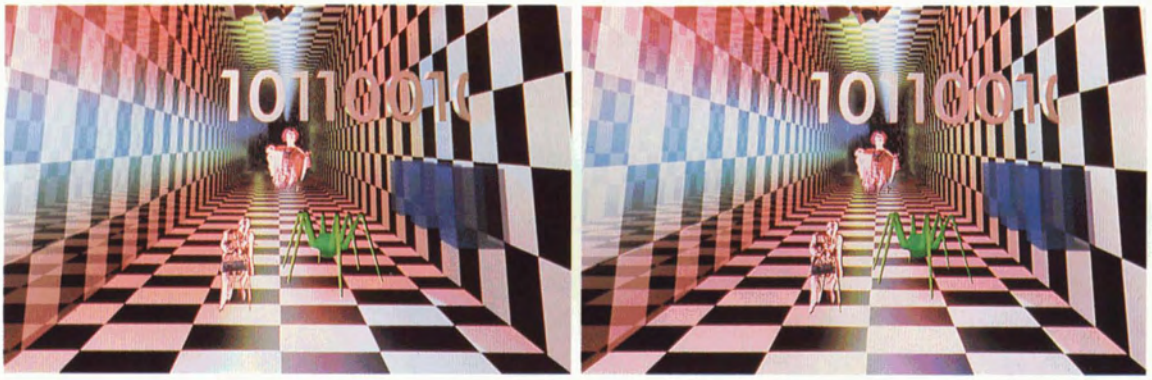
n Into 3-D Virtual Reality

le Luciano

cadero Plaza.) The mood in the theater was festive, happy, post-modern. The audience, resembling one of those photographs of 1950s audiences at a 3-D movie, was conscious of itself as part of an unusual event.

Adding even more to the surreal *ambience* of the event was the distinctive environment in which the performance took place. *Invisible Site* was presented inside the expansive contours of a church, part of an old office building complex at 110 McAllister Street. (The theater was identifiable only by means of a beautifully crafted, neon "crack," an emblem of California earthquake culture, suspended above the entrance on the front of the building.) Inside, the predominant visual element was a 40 foot wide by 60 foot high translucent silver screen which, like the Gothic shapes of the stained glass windows in the church, tended to pull the eyes upward.

Invisible Site combined a remarkable musical score by composer Marc Ream, live actors, computer-generated animation imagery – all within a 3-D visual frame-



Hacker/Rimbaud (Rob Keffe), on the surface with crutch and keyboard, is accompanied by his muse/Ariel (Susan Volkan), above, and virtual spider in the Invisible Site digital landscape. Stereo by George Coates Performance Works staff.

tities within the performance; the character as a flesh and blood human hooked up to the network, and his or her "digi-denity" in the virtual environment. In the *Sho*, a woman "end-user" enters the VR net (Virtual Reality network). Once she is in the system she chooses to explore a "singles rendezvous" and enjoy a fantasy where she will be Shakespeare's Prospero and play out an S&M encounter with another end-user playing Caliban. Her fun is derailed by a renegade hacker who illegally enters the VR net and imposes *his* fabrication where he is the French poet Arthur Rimbaud and she is Euripides' Medea, who killed her children to seek revenge upon the unfaithful father.

The complications of Hacker/Rimbaud's behavior in the VR net make for an obscure plot, but *Invisible Site: A Virtual Sho* is not about a traditional linear plot. The goal is not to tell a story. The purpose is to take the audience into another space. The message is visual, not verbal. The production is truly multi-media, combining live operatic vocals, an original musical score, stereoscopic slides, motion pictures, live actors, and projected computer graphics that interact in real time with actors. Director George Coates has described the performance an an immersion in a "total environment," and for once the phrase is not just hyperbole. *Invisible Site: A Virtual Sho*, has tapped into the current rage over the possibilities of "Virtual Reality," yet it cannot be dismissed as trendy exploitation.

Digital Images

Perhaps the most trumpeted aspect of the performance is the real-time interaction of actors and computer imaging. The computer images are created by a staff of young talented programmers like M. Creon Levit. When he is not contributing to George Coates Performance Works, Mr. Levit is a scientist working for NASA's Ames Research Center. He demonstrated for me the twisting geometric computer graphic that is identified in the performance as a digitized copy of Rimbaud's central nervous system. The design was actually programmed for a completely different purpose at Ames, which may

George Coates standing in the Performance Works Theater.

work – as part of a fluid, surreal fantasia about Virtual Reality.

The futuristic plot concerned a young woman (Pamela Sebastian) and her journey into the "virtual reality" of an interactive computer world. From a menu of options, she selects a rendezvous with the character of Caliban from Shakespeare's *The Tempest*. (She wears goggles called Head Mounted Displays.) What begins as a pleasant, recreational sojourn into fantasy goes haywire when a computer hacker - who adopts the guise of French poet Arthur Rimbaud - enters the computer and wreaks havoc on the ordered contours of this "reality". Other performers appear and act out the roles of the Dalai Lama and Medea, the tragic heroine from the Euripides play.

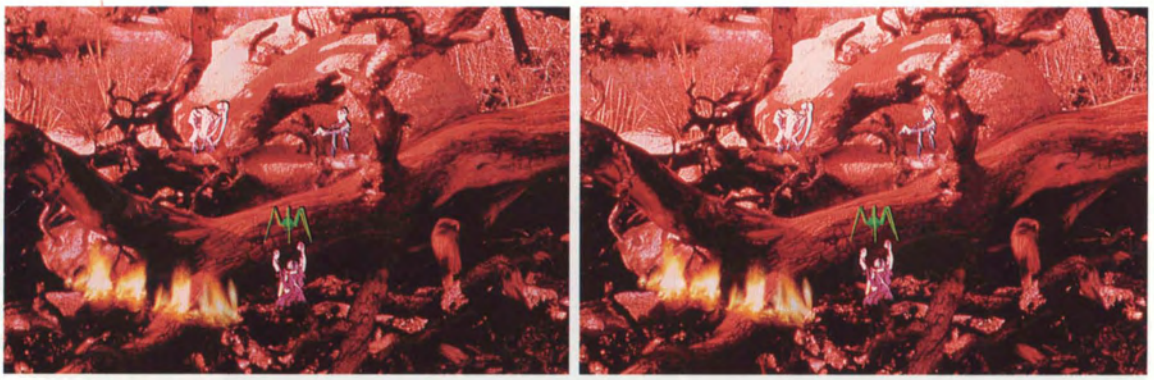
Not easily assimilated in terms of conventional storytelling techniques or easily accessible meanings, this plot nonetheless provided the pretext for a collage of complicated, fluid, and often lushly beautiful images. One San Francisco critic compared key images in *Invisible Site* to the "diaphanous silk-screen collages of Robert Rauschenberg". For me, Coates' achievement resides in creating a new *kind* of visual experience that attempts to communicate complex juxtapositions of moods and emotions - as well as *ideas* about life, art, technology, and "virtual realities" - in completely new and unfamiliar ways.

Coates, who has been creating experimental works

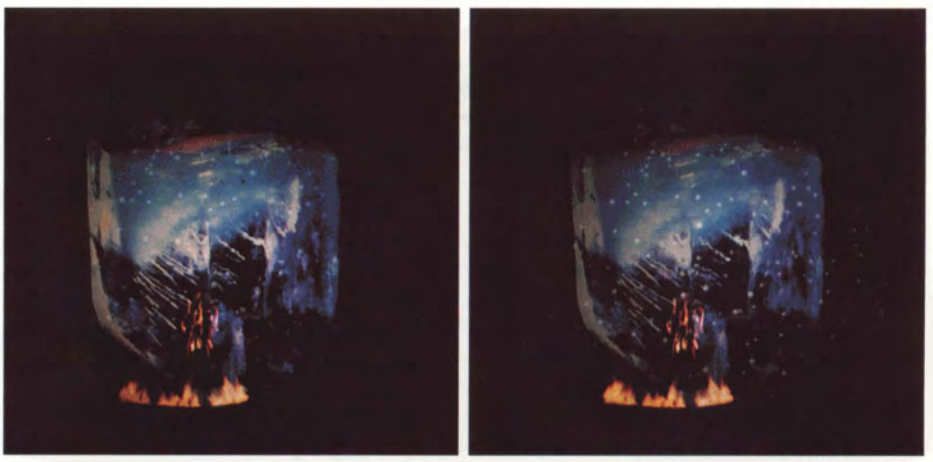
be why it looked more to me like a set of swirling vortices than a neural net. The "central nervous system" graphic was created on the Silicon Graphics Iris 4D/320 VGX Model 60 workstation, the same system used to create the special effects for *Terminator 2*.

Directly behind the Silicon Graphics workstation is a Macintosh IIfx computer. Frances Dosé, a computer animator, uses the Macintosh IIfx during the performance. She initiates the projection of the wire frame human figure so it will walk with the actors and sit down with them on steep and deserted San Francisco streets. She also stretches and distorts images of the Mona Lisa and Michelangelo's David to make it appear that the actor portraying Hacker/Rimbaud is manipulating them on stage – or in his virtual space, depending on your point of reference.

The advent of people and digital image processes interacting on stage is made possible by a $12,000 Espirit 4000G graphics projector. The projected computer graphic images are very sharp, however they are not stereoscopic. George Coates explained that although the Silicon Graphics workstation and the software could easily generate the necessary pairs of images, the money for a second projector is a more difficult matter.



The 14th Dalai Lama Kneels below a green virtual spider in a desolate cyberspace as Hacker/Rimbaud and Ariel look on. (Stereo by George Coates Performance Works staff.)



A live actor behind the screen appears to be inside the melting ice cube. Two stereo projections and a motion film are used. (A 1.5 second exposure made during a performance.)

Gossamer Curtain

Real time interaction of actors and computer generated images is new and exciting, but any NSA member would instantly recognize in San Francisco since 1976, approaches the creation of a performance piece improvisationally, like a jazz musician. Collaborating with an armada of technicians and computer experts, Coates assembled *Invisible Site* by a process of intuitive ordering of otherwise disparate images into an assemblage held together by the amorphous shape of the plot. (It was by no means easy to follow the logic or progression of the sequence of events, which were experienced as random, powerful occurrences in an unfolding dream.) Coates is, of course, interested in communicating through a language of pure visual imagery, and in this regard *Invisible Site* was an altogether extraordinary experience.

The most impressive visual ideas involved a complicated synthesis of different imaging methods. The commingling of live, moving actors – some behind, others in front of the giant scrim – with computer-generated, animated images, all moving within the basic visual reality of a particular stereoscopic projection, resulted in startling visual phenomena. In one scene, the actor playing Rimbaud appeared inside a television set with a shattered screen, while a giant, mobile eyeball scrutinized him closely and an actress viewed the scene from a vantage point along the narrow apron space in front of the screen.

In a memorable image, the Dalai Lama – played by Ray Chung, a marital artist whose movement patterns brought exceptional grace to the performance –

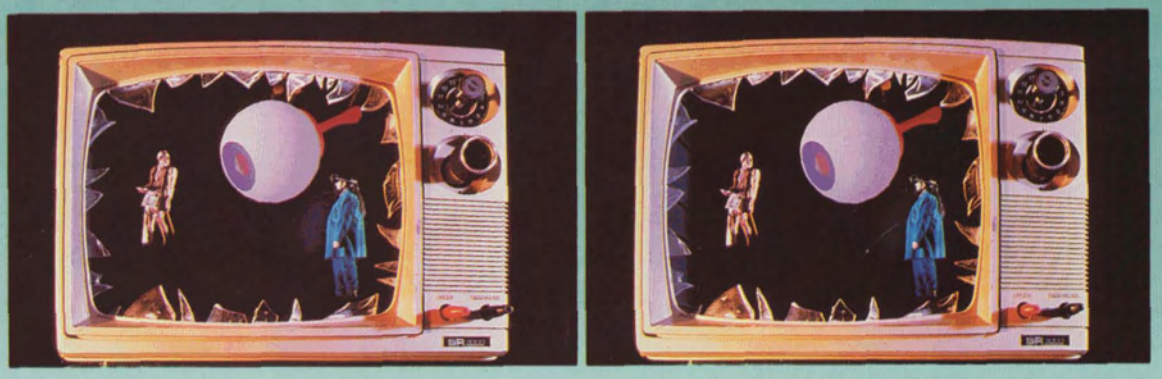
M. Creon Levit demonstrates the computer graphics that he created on the Silicon Graphics Iris 4D/320VGX Model 60 workstation. Along with support from companies like Silicon Graphics, PanCommand Systems, and Opcode Systems, the production was aided by several foundations including Andrew Mellon, Ford, Hewlett, Gap, California Arts Council, and the City of San Francisco, as well as an NEA challenge matching grant.

that the key special effect of *Invisible Site: A Virtual Sho* is the three dimensional changing sets created by stereoscopic slides. The images are striking. The stereo photography excellent, and the contributing stereographers include NSA member Robert Bloomberg, whose images include an egg and a skull. During the performance an actor strikes the huge three dimensional egg and it cracks, then dissolves into the skull. Other slides show scenes of Gothic buildings, desolate burned out landscapes from the East Bay fire, and imaginary landscapes of twisting tunnels, huge globes, and billowing clouds.

The use of stereo photography is great, but, hey, polarized projection technology is well over 50 years old, perfected by Edward Land and demonstrated at the Worlds Fair in 1939. NSA members might wonder what all the fuss is about. We show images just as dramatic at each regional meeting. Is this just old wine in a new bottle? Well, yes and no. Many members of the audience may have never seen a properly exhibited stereo film, so for them it is new. Still, there is nothing new about polarized projection of stereo images. What *is* new, and is one of the breakthroughs that George Coates and company have introduced, is an effective semi-transparent screen.

George Coates production staff share technology openly but become rather taciturn when the discussion shifts to their special screen. All they will say is that it is made of a synthetic fiber and is produced "somewhere on the east coast." What is remarkable about the screen is that it reflects projected images clearly and brightly without depolarizing the light, and is at the same time transparent enough to allow a brightly lighted actor behind the screen to appear as if suspended within the 3-D projection. It is this advance that allows *Invisible Site* to represent virtual worlds. (The gossamer curtain could be used in more mundane theatrical performances as well, to create realistic and dramatic stage sets. Wide-spread use of "stereo stage sets" would generate even *more* interest in stereo photography.)

What is behind the curtain is no less amazing. Scaffolding, mobile ramps, and even an elevator are used to position the flesh and blood actors within the three dimensional space defined by the stereo projections. One scene places Prospero/Medea at the top of a stone entrance way and Hacker/Rimbaud at the bottom. To make the actors blend with the projected three dimensional set they must be standing at the appropriate height and distance. The challenge is to position people in the nearly infinite set of loca-

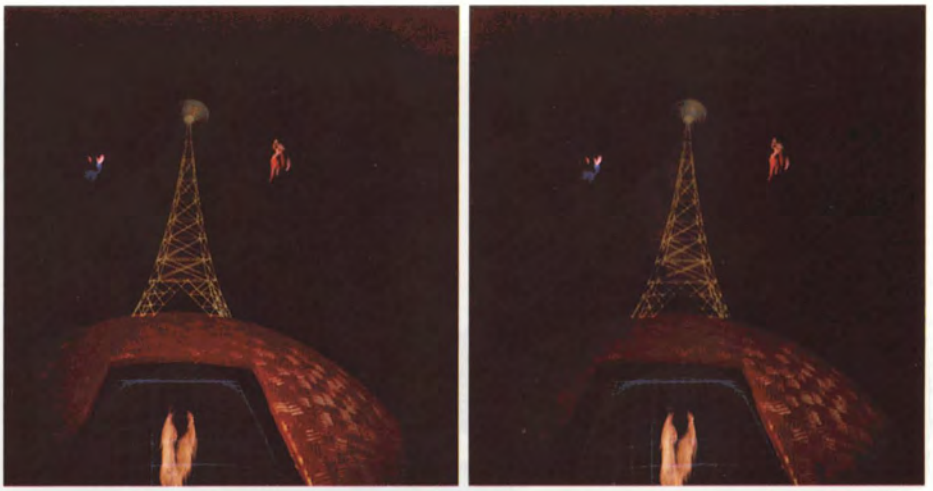


An end user (in blue) encounters Hacker/Rimbaud in the VR net. (Stereo by George Coates Performance Works staff.)

tions in the ever-changing stage space. One device that helps to meet the challenge is a large round platform attached to a bowl-like hemisphere. The bowl rests in a cradle with motors that can turn it to almost any angle, or rotate it like a phonograph turntable. In a scene showing a steep hill, the platform is tilted toward the audience so actors can walk realistically on the virtual hill. Later it is made to rock side-to-side to simulate ocean movement.

Science and Art

Peek a little further behind the curtain and you see the brilliant artists and scientists who create the spectacle. At the center of them all is George Coates, a man who is so often compared to Oz and called a wizard that you expect him to be wearing a pointed hat. *Invisible Site* is Mr. Coates' most recent in a series of performance works that have pushed the boundaries of live art. George Coates Performance Works was founded in 1977 and has produced works including *The Way of How, are/are, Seehear, Rare Area, Actual Sho,* and *Right Mind.* Each creation utilized unusual imagery, but *Invisible Site* places more emphasis on technology. It is an outgrowth of Coates' attempt to bring the scientific and artistic communities together for creative collaboration. He founded the Science Meets the Arts Society (SMARTS) to facilitate the exchange of creative application and technology ideas.



A complex set of images from the scene Pain Grid Blues, *which includes three live actors behind the screen, two stereo images (clouds and red ball), a motion film (broadcast tower) and interactive computer graphic (blue grid). (Taken with a Kodak Stereo camera during a performance, this 1.5 second exposure doesn't reveal the actual brightness, sharpness and impact of the multi-media production.)*

What lies ahead for George Coates Performance Works? I asked Production Manager Daniel Corr whether future productions would emphasize stereo projections. He said that he couldn't say for sure, but that the next performance work will probably make far more use of the Silicon Graphics workstation for "morphing." Morphing transforms the image of an object smoothly into another object, as seen extensively in *Terminator 2* and *Star Trek VI.* Whatever they come up with, it will certainly be creative.

(While *Invisible Site* closed its run early this summer, there is enthusiasm in the production company about the potential of stereo projection as part of the interactive media mix for their next production, which will open late in 1992. For information, contact George Coates Performance Works, 110 McAllister Street, San Francisco, CA 94102.)

The author wished to thank George Coates Production Works Executive Director Beau Takahara and Production Manager Daniel Corr for allowing stereography in the theater and for supplying the representative composite stereo images created by their staff.

"flew" far above vast expanses of earthly terrain for several, sustained minutes. (In reality, the actor, suspended high above floor level, hung from a bar and moved his legs to suggest the motion of flight.) In another striking image, a live figure strains mightily to break out of an elastic web of blue light strands, while the RKO radio tower, perched atop a gigantic red globe protruding outward toward the audience, blips out sound waves high above the stage.

Other "fantastic" images recurred throughout the 80 minute performance. There were numerous 3-D projections of the ravaged houses and hillsides left in the aftermath of the 1991 Oakland Hills fire. (A great deal of flame imagery, presumably inspired by the Oakland disaster, appeared throughout *Invisible Site.*) These, in turn, were contrasted with 3-D images of lush, serene forest green. One fanciful, recurring image that lingers in my mind featured an animated stick figure walking down a San Francisco alley toward a group of human figures, huddled together against the rain. (Charles Rose, Roger Mulkey, Padric McLaughlin, Robert Blumberg, and Steven W. Anderson were credited with the stereo photography for the production.)

The exhilarating sensation of experiencing these bizarre, offbeat images was one of seeing forms and colors, as well as the qualities and movements of the performers, in ways never before seen by anyone.

Only 94 Luxus cameras were made, and this one came with the gold stereo attachment, a gold accessory rangefinder, red leather pouch with gold trim, and, of course, a gold lens cap.

This article first appeared in the summer 1991 issue of The Journal *of the Photographic Historical Society of New England and is used here with permission. Those attending the 1990 NSA convention in Manchester, New Hampshire heard the story of this rare Leica during Mr. Naylor's illustrated keynote presentation. The color stereo close-ups of the camera were taken for* Stereo World *by Paul Wing.*

The story of the Stereo Leica Luxus is about one of the rarest Leicas, and a collector's twelve-year wait to acquire the camera from behind the Iron Curtain.

According to recent research by Selim A. Nahas published in *Viewfinder*, the quarterly journal of the Leica Historical Society of America, 94 Leica Luxus cameras were delivered between 1929 and 1932 from the Leitz factory in Weltzlar, Germany. Mr. Nahas advocates, with good evidence, that most of the Luxus cameras were made as elegant display or demonstration cameras, while others were sold to those who could afford them.

The Luxus was a Leica Model A, its metal parts, including the lens body, covered with gold, its body handsomely covered with lizard skin in a choice of colors - red, brown, blue or green. It may be the most beautiful camera ever made. Certainly, it was the first luxury 35mm camera.

Leica Luxus owners do not often part with their classy cameras. Luxus cameras are rarely seen at auctions. I can remember only one verified Luxus camera sold at auction in the past 20 years. Very few have changed hands in private sales. The last two, sold privately, were acquired by a Japanese dealer and a Singapore collector.

In 1978, I made a regular visit to a company in Stuttgart, Germany, with which I was closely associated. I was known to most of the German employees as a camera collector. One of the firm's engineers, who was born in Dresden, a city later to become part of Communist East Germany, spoke to me about photography. The engineer, Mr. Kramer, managed to leave Dresden in 1960 just before the wall was built. He told me some-

The Thrills of
Three-Dimensional Photography
now yours easily and inexpensively with the
Leica
REG U S PAT OFF
THE UNIVERSAL CAMERA
Now, with the new STEREOLY attachment it is possible to use the LEICA Camera interchangeably for regular or stereo photography, for action shots or "stills". The stereo pictures are photographed in transposed positions on the LEICA double frame negatives, and no special printer or enlarging apparatus is required for finishing the positives. The resulting views preserve all the natural depth of the third dimension, just as seen with the eyes.
5 INTERCHANGEABLE LENSES
LEICA'S Versatility, combined with its small size (it slips easily into the pocket) is amazing. It is instantly convertible into a telephoto camera, an aerial or panoramic camera, a speed camera, a portrait camera, and many more. Economical —takes up to 36 pictures on a single roll of cinema film. Enlargements up to 12 x 18 inches and more are marvelously sharp and clear.
Write for Free Illustrated Booklet
Stereoscopic Photography with the Leica Camera
E. LEITZ, Inc. Dept. 55 60 East 10th Street, New York

This early 1930s Leica ad pushed the Stereoly, but featured a totally flat pair of photos!

Leica 3-D GOLD

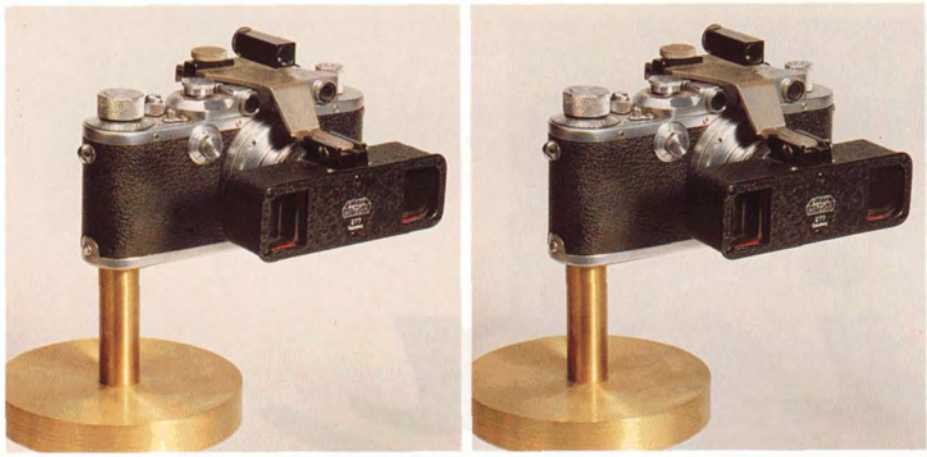
by Jack Naylor

what casually, that his uncle, who still lived in Dresden, had a beautiful Leica camera. He described it, in response to my questions, as a red and gold Leica for stereo photographs. The engineer said the camera had been purchased by his uncle's father who was killed in a World War II bombing raid. The original owner had been an important German political figure and his son, the present owner, had also been involved in government.

Such information given to a collector causes his adrenaline to run high. The engineer had described one of the world's rarest cameras, with or with without its gold stereo attachment. It was an unknown camera, How does a collector approach a camera collector in a totalitarian state, at a time when ownership of all valuable items must be reported to the state, when it is a crime to remove such an item from East Germany to the west, when it is virtually impossible to visit Dresden and when East Germans are shot trying to get through the wall to freedom? Later in 1978 I decided to write Herr Braun (not his real name), the camera owner in Dresden, using his nephew's name and my German business association as an introduction. In my letter I asked about the Leica stereo camera. Several months later, Mr. Braun replied in German. He was pleased to have information about his nephew in Stuttgart and yes, he knew of such a camera that had belonged to his father. "Some day perhaps we could discuss it," he said. There was not a word about politics or the camera in his first letter, or in the occasional correspondence that would follow for twelve years. I told Mr. Braun in our infrequent exchange of letters, about camera collecting, and the growing interest in photographic history; and he told me that before his retirement, he had been an engineering manager for the East German government, and that he had survived his wife and two children.

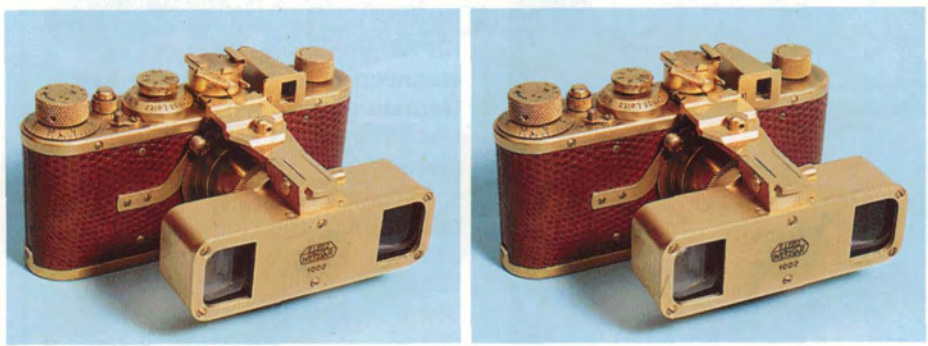
The years passed. In later years I talked about the existence of such a camera with the management at Leitz in Weltzar, and with Leica historians and collectors in America and Europe. Everyone agreed that a Leica Luxus Stereo Camera could exist but no one had seen such a camera.

World-class camera collector and NSA member Thurman F. (Jack) Naylor in his famous private museum with just two of the many and varied stereo cameras included in the collection. Stereos by Paul Wing.



Seen on a later model Leica, the standard black finish Stereoly attachment brought the Leica name to stereo photography, but 35mm film had been combined with stereo years earlier in the pioneering 1913 Homeos from Jules Richard.

Designed for viewing stereo filmstrips, the special Leitz viewer had an industrial, no-nonsense look. (It may have inspired the development of the 1933 Tru-Vue stereo filmstrip format.) Most owners of Leica Stereoly attachments probably made print pair enlargements from their negatives, as the filmstrip viewer is a rare item. There is no evidence that a gold one was created to go with the stereo Luxus.



The gold plated Leica Luxus with its gold Stereoly frame splitter attachment in place. As the only known example of a gold stereo Leica, it could easily be worth several times more than most other rare cameras in the world, flat or stereo.

We will never forget the TV coverage of East and West Germans climbing atop the Berlin Wall, on November 9, 1989 and the mingling of new found neighbors at the Brandenburg Gate. [See *Stereo World,* Jan./Feb. '90.) The wall which had traversed the boarder between the two Germanys had fallen. The Germanys were reunited as one country on October 3, 1990, but after November 9, 1989, East Germany was opened to the west.

On a business trip to Germany in 1990, I traveled to Dresden to meet Mr. Braun and hopefully to purchase the camera. He knew why I was coming and had inferred, but not directly stated, that he was prepared to sell his father's camera.

The city of Dresden is worth comment. With a population of about one half million, it lies on both sides of a broad curve on the Elbe River, 125 miles south of Berlin. Before World War II, Dresden had been a city of parks and gardens and a center for the arts. It was also a manufacturing city which had spawned 27 camera manufacturing firms, including Zeiss/Ikon and Ernemann. The Russian Army captured Dresden in 1945, after the city had been virtually destroyed by allied aerial bombing and artillery fire. As I drove from the train station to Mr. Braun's modest home in an underpowered smoke-belching East German Trabant taxi, it was obvious that the city was down on its heels. There was World War II damage to buildings and roads still unrepaired. But more repressive was the look of isolation and concern for the future that could be read in the faces of people on the street.

Mr. Braun answered the door with his close friend, who would be our interpreter, standing behind him. Mr. Braun was rather vigorous for a man 81 years of age. He was a large man with expressive eyes. We liked each other. I gave him a small art object from America, which he seemed to appreciate. After coffee and conversation about the United States, West Germany, Dresden and Leica, we moved to the Kitchen where a prewar, brown tin cookie box was in

the center of the table. I assumed correctly that this was the moment of truth. After 12 years, the Leica was within my reach in a tin box. The camera was there along with other memorabilia of his father, including a pipe with gold fittings, three gold watches, some medals and a few official looking documents. Mr. Braun had not reported his father's valuable items to the state in order to avoid the annual tax. He told me that since World War II the tin box had been kept in the chimney of the unused kitchen fireplace. We had no trouble coming to terms and I paid him with West German Marks. After pleasantries and more coffee and a piece of cake, I wrapped the camera and its accessories in cloth shoe bags, which I had purposely carried to Dresden. We said our goodbyes, and I was off to the railroad station in a taxi which was in worse condition than the one in which I had arrived.

It was, in fact, a somewhat upsetting visit for me. Here was a fine, intelligent man, who had lived far from comfortably under Communism for most of his lifetime, this because of the way our leaders in World War II drew lines on a map. Mr. Braun was too old to leave, and he would die in Dresden, but at least he would be a free man, and that knowledge gave him some happiness.

Mr. Braun knew little about photography. He said he never shared his father's interest in photography, but he clearly remembered his father using the Leica camera.

The red and gold Leica Luxus camera, serial #37277, its gold rangefinder, the red leather and gold camera pouch with the word "Leitz embossed on one side, and the "Leica" on the other side, and the gold Stereoly attachment, serial #1002, with its brown leather case are now displayed behind glass in my museum, along with other Luxus cameras. Visitors focus on the spectacular Stereo Leica Luxus, which seems to stare at them through its gold encased eyes.

It is sometimes inappropriate to write about price; however, there is such intense interest in "What is the Stereo Leica Luxus worth?" that a value estimation seems in order. The camera is apparently one-of-a-kind, so we can back into its value by examining the few Luxus sales, estimated auction values, and an offer to purchase the camera.

An authenticated Leica Luxus camera with an Elmar lens can be sold in the United States for about $25,000. At a German or English auction, the price would probably be closer to US $30,000. A Leica Luxus with a brown lizard skin body and a rangefinder was sold by a Hong Kong dealer in 1990 for US $45,000.

Japanese Leica collectors have been known to use their strong yen to pay a reported US $40,000 for a Luxus. The Stereo Luxus outfit in pristine condition with gold rangefinder, Leica red leather pouch and gold Stereoly accessory may be one-of-a-kind. We can only speculate on what it would bring on the world market. The camera is not for sale, but an offer from a Japanese collector was extraordinary! Could it be sold for an amount in the low six figures? Perhaps!

Stereos Afloat

The story of 1870s stereographer J.P. Doremus and his floating studio/gallery on the Mississippi River is documented in detail in the summer, 1992 issue of *The Palimpsest*, the popular history magazine of the State Historical of Iowa.

Doremus spent several summers aboard the Success, his 65 x 85 foot flatboat equipped with darkroom, portrait studio and living quarters. His stereos of the river, nearby towns, and people who lived and worked on the river were published on cabinet size orange mounts with his anchor logo at the top and his boat on the sides. The article includes an excerpt from his diary and half-stereo enlargements from 20 of his views, with a full view and mount appearing on the back cover of the issue. While not in stereo, the images are exceptionally well reproduced, and a sidebar on the history of stereography is included.

The summer 1992 issue of *The Palimpsest* is available from Publication Sales, SHSI, 402 Iowa Avenue, Iowa City, IA 52240 for $4.50 plus $1 postage.

'92 Daguerreian Annual

A Review by John Dennis

Once a year, the Daguerreian Society publishes *The Daguerreian Annual*, a compilation of the best current research and writing concerning the history, science and art of the Daguerreotype. Edited by frequent *Stereo World* contributor Peter E. Palmquist, the 1992 edition containing a wealth of widely varied articles is now available.

The journeys and work of several photographers are covered in the Annual's articles, as well as excerpts from their own writings. An 1839 article by one of the first Americans to see daguerreotypes in Paris is reprinted, as well as a rather scary piece about an Australian photographer who suffered a near fatal case of mercury poisoning while making daguerreotypes in 1991.

The Daguerreian Annual is a fascinating and worthwhile addition to the library of anyone interested in the earliest photographic history, and a must for those specifically interested in daguerreotypes. Over 170 illustrations are featured on the book's 256 pages. The per copy price is $30 plus $3 shipping in North America and $5 overseas from: The Daguerreian Society, Peter Palmquist Editor, 1183 Union Street, Arcata, CA 95521.

NEWS FROM THE STEREOSCOPIC SOCIETY OF AMERICA

by Norman B. Patterson

The Society

The stereo effect does not depend on color, and neither does the near-magic mixture of sunlight and silver that produced the first photographs. But the desire for color and the search for it began almost with those first photographs. Now we have marvelous ways of attaining it and most stereographs currently being produced are in the form of color photographs of one sort or another.

Hand tinting was the earliest process, and when done well it led to very pleasing results. One can still do this today and stereographs so treated have a charm of their own which is different from the dazzling results of color photography. Each can be enjoyed for what it is. Antique hand-tinted stereo Daguerreotypes, expertly crafted nearly a century and a half ago, are still a source of wonder and delight – at least those that have survived.

Color or Black & White?

Some people are devoted to the black and white image in photography. This does not mean that they do not appreciate the color photograph. It does mean that some results of monochrome photography are so good and rich in their display of tone and contrast that they are an end in themselves and completely satisfying artistically to their makers. But success is the exception and most photographers do not attain such spectacular print quality routinely. The addition of color makes most photographs much better – compare today's color print snapshots with those of the black & white variety of a former era. The color has raised the level considerably (with a big assist indoors from electronic flash). But in top level work, there may not be so much difference.

Although, in their day, they got little respect from "serious" photographers, I believe the best portrait work literally poured from the still-photo departments of the old movie studios in the heyday of black & white cinema. They had state-of-the-art equipment and their models were the most photogenic people one could imagine. I must admit that I get a reaction to their best black & white portraiture, a special punch that I seldom get from the later color portraits produced for similar purposes. On the other hand, although some strident objectors to colorization of old black & white movies would have us believe that all of the old monochromatic films were cinematically superb, that is far from the truth. Many are greatly improved by skillful colorization, which has become quite an art in itself with only a few short years of experience behind it. *Casablanca* is still my favorite all time movie and although the photography is very well done, it is my opinion that the colorized version improved some scenes considerably and hurt none of them. It is even better colorized. Unfortunately, as I see it, criticism of colorization is fraught with snobbism and grossly unfair. Not all black & white pictures take well to tinting (or colorization) but for those that do the option should be open.

Would an Ansel Adams print

"Painted Pony and Shadow" by Nancy Sobottka of Florence, OR shows the range of her Nimslo camera in this popular view which traveled the Print Circuit. Fuji 200 film, printed on 72 RCF paper.

"Crystal Garland" by Mark Willke of Portland, OR was one of the favorite views of 1991 in the Beta Transparency Circuit. It reveals the effects of a heavy frost on spider webs early one morning of November, 1987. Taken with a Realist Macro and flash on Kodachrome 25 just as things were starting to melt.

look as good in color as it does in black & white? I have no idea. He enjoyed making a sort of photograph that most, but not all, admire. I do wish he had made some of them in stereo – maybe he did but I have never seen any. Stereographs may not need to have color, nor do color photographs have to be in stereo. I would like to keep all of the choices available. For most transparency work the choice of color has already been made since the alternative is not readily found in the marketplace. The option for stereo is one that I, as well as most NSA members I suppose, would elect.

Will it Fade?

Inevitably, with color photography the question arises as to whether (or more accurately when) it will fade. In my personal family archives only Kodachrome and tinted portraits are intact after forty or so years. Other transparencies went flat and muddy. Early Kodacolor prints turned yellow or faded or both. But who and what are we making pictures for? Mostly it is for current pleasure, I would venture to say. But we do like our keepsakes to remain intact, and a deteriorated photograph is a damaged historical document or a lost family artifact. If we collect vintage photography, we may be even more aware of such a loss. The old stereo Amateur Photographic Exchange Club only asked that exchanged stereo prints not fade for a year or two. We have come a long way since then.

Nimslo Revisited

In a Mar./Apr. '92 letter to *Stereo World*, Nancy Sobottka of Florence, OR, extolled the virtues of the Nimslo camera in rebuttal to some remarks I made in this column in the Sept./Oct. '91 issue. Nancy wields a Nimslo with great skill and her entries in the Society's print circuits are competitive with the best. I did not intend to leave the impression that the Nimslo is not a well-crafted instrument. Its fixed focus and exposure features are often virtues, and adaptive lenses easily correct it for closeups and scenics. It is an especially good camera to use when quick action is needed to get the picture, and the folio entries show it to be quite versatile in the hands of Society members. Fine results appear regularly in the Stereoscopic Society circuits.

One of Nancy Sobottka's print entries is illustrated, showing the range of the Nimslo using Fuji 200 film. The Nimslos are out there being used, which is great. But the original intent of obtaining lenticular prints has really not held up, which was the big disappointment to the manufacturers. Lenticular prints, by and large, are not impressive stereo, have not caught on, and are not the future of all those nice cameras that are still with us. We can look forward to lots of good Nimslo stereo for years to come, but it won't be lenticular.

Lucia Brann, 1902-1992

I regret to note the passing of veteran Society member Lucia Brann on March 31 at San Rafael, CA. She was a long time member of the Stereoscopic Society and was an active contributor in Alpha Transparency and the print circuits until her health failed about a year ago. Outside of the Society, she had a long history of active participation in organized amateur photography. She was a fine stereographer and we learned much from her well-crafted Realist format views, her viewcards, and from her comments on our own entries. We will miss Lucia.

Society Membership

Stereo photographers new or old, who may be interested in sharing their images via mailed folios by joining the Stereoscopic Society, should write to Membership Secretary, E. Jack Swarthout, 12 Woodmere Dr., Paris, IL 61944.

Rules for *Assignment 3-D*

(See Article on Inside Front Cover.)

As space allows (and depending on the response) judges will select for publication in each issue at least two of the best views submitted by press time. Rather than tag images as first, second or third place winners, the idea will be to present as many good stereographs as possible from among those submitted.

Prizes are limited to the worldwide fame and glory resulting from the publication of your work. Anyone and any image in any print or slide format is eligible. (Keep in mind that images will be reproduced in black and white.) Include all relevant caption material and technical data as well as your name and address. Each entrant may submit up to 6 images per assignment.

Any stereographer, amateur or professional, is eligible. Stereos which have won Stereoscopic Society or PSA competitions are equally eligible, but please try to send views made within the past eight years. All views will be returned within 6 to 12 weeks, but *Stereo World* and the NSA assume no responsibility for the safety of photographs. Please include return postage with entries. Submission of an image constitutes permission for its one-use reproduction in *Stereo World*. All other rights are retained by the photographer.

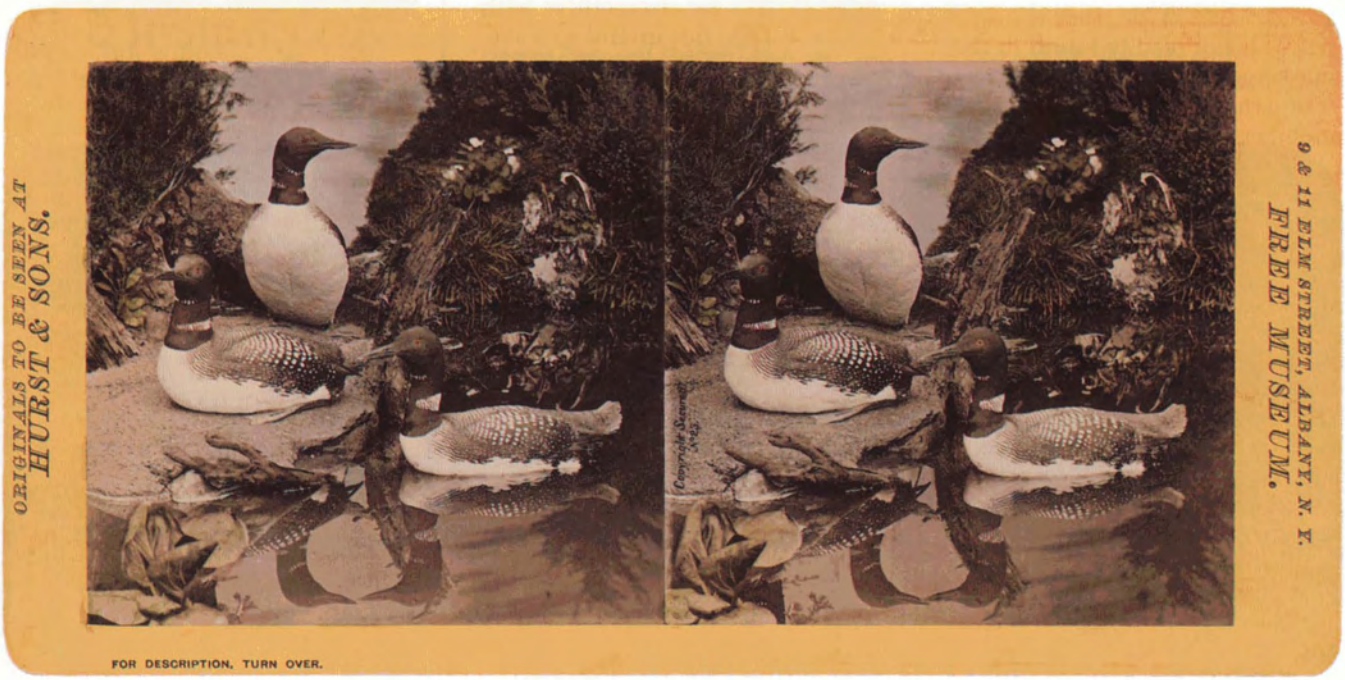
Send all entries directly to: ASSIGNMENT 3-D, 5610 SE 71st, Portland, OR 97206.

James Hurst's M

Stuffed

In March of 1871 a private museum opened in Albany, New York under the name Hurst & Son's Free Museum and Stereoscopic Studio of Natural History. The *Albany Morning Express* reported: "Many of our citizens availed themselves of the invitation of the Messers. Hurst and yesterday visited their elegant Museum and unequaled Stereoscopic studio. Thirty years have been devoted to the collection of the native and foreign specimens to be found in the Museum, and we can say without fear of contradiction, that the display of birds cannot be surpassed in this country." The *Daily Knickerbocker* reported: "An institution that has long been needed, not only for the benefit of our own citizens, but for the amusement and edification of strangers visiting our city."

James A. Hurst and his two sons owned and operated the museum. James Hurst was born in England about 1810 and moved to Canada at an early age. While in Canada he learned the art of taxidermy. In 1847 he moved to Utica, New York and opened a taxidermy shop. In 1849 he did some work for the



"Great Loon or Diver" J.A. Hurst First Series, No. 23, 1871. Much of the realism in Hurst's views is due to his use use of real water, real rocks, and real plants unlike other studio "wildlife" views of the time. All views from collections of the author and T.K. Treadwell.

New York State Cabinet of Natural History and subsequently was hired in September of 1850 as New York State's first taxidermist for the sum of $200.00 per year, for which he was supposed to supervise, examine and keep in order the State's collection of stuffed animals. His salary remained unchanged for twenty years and was far below the wages paid to other museum employees. Additional income came from custom work and sales of all types of mounted birds and animals. An early advertisement stereograph of specimens for sale read: "Prepared and mounted by James A. Hurst, Taxidermist to the New York State Cabinet of Natural History." He held this position until his death 32 years later. James married three times and had two sons by his first wife, both of whom died in the 1870s.

Located at numbers 9 and 11 Elm Street, the Hurst Museum buildings were three story brick residences that took three years to remodel and included "skylights which secure an out-door effect" and contained the family residence, museum, museum store

ıseum and Views & Tinted

by Del Phillips © 1992

"American Deer" J.A. Hurst First Series, No. 24, 1871. Many of the Hurst views involve specimens eating or being eaten.

"The Artist, and his friends." J.A. Hurst Second Series, No. 4, 1875.

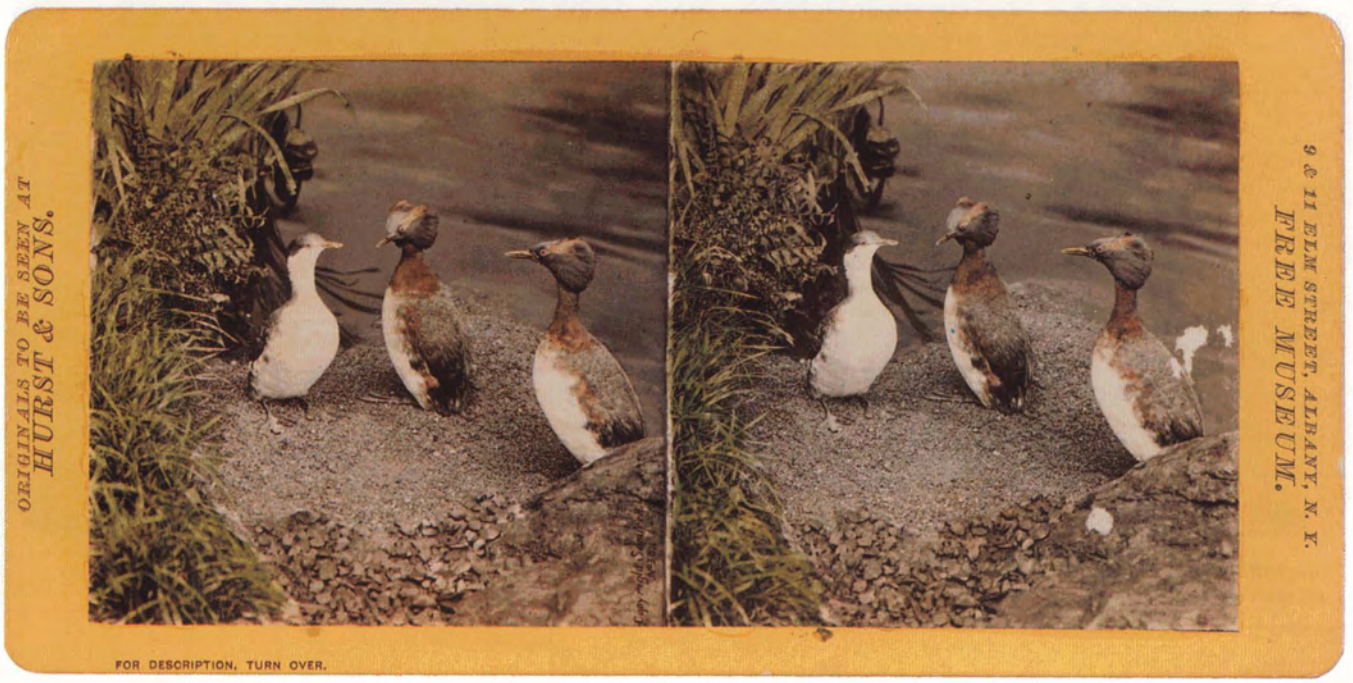
and stereoscopic studio. Hurst later purchased number 13 Elm street and increased the size of the museum.

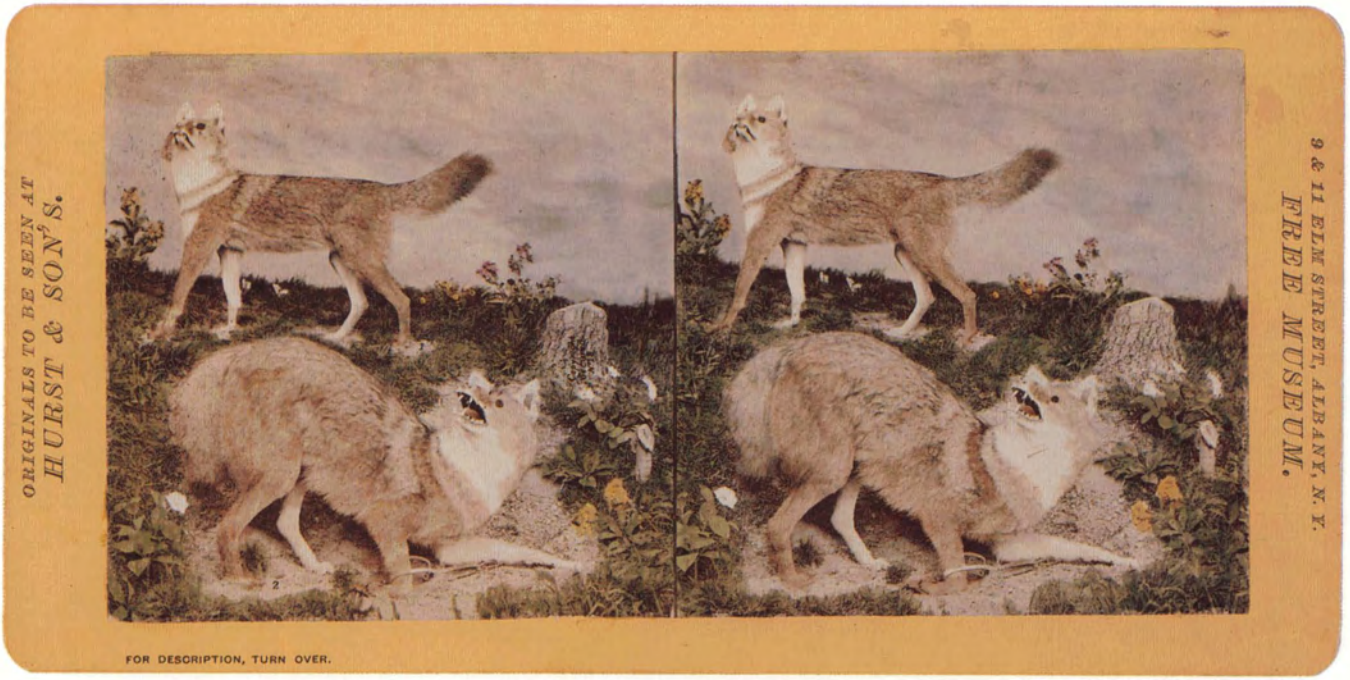
The museum was described as "one of the most beautiful and attractive collections of stuffed birds and beasts that was ever seen in this country." Hurst was described as a "pioneer in stage-setting" and the arrangement of displays by other museums using naturalistic surroundings would not appear for another decade.

The store was at the exit of the "Free" museum and the *Albany Morning Express* wrote: "The sales room is tastefully decorated; the walls on all sides are hung with hanging hat racks, surmounted by bucks' heads." Sold in the store were mounted animals and birds, foreign and native bird skins, deer heads, glass lamp shades, taxidermist supplies, artificial eyes, stereoscopes and stereoscopic views of museum exhibits. One advertisement read: "All subjects of Natural History preserved and mounted to order."

Located on the top floor of No. 11 Elm, the stereoscopic studio was described by the *Daily Knickerbocker* this way: "In the upper portion of the building adjoining his residence and museum is a stereoscopic studio where sketches of animals and birds are taken in their natural element. He has tanks and water arrangements by which he can create ponds, creeks, or

"Horned Grebe" J.A. Hurst First Series, No. 16, 1871.





"The Prarie Wolf" J.A. Hurst First Series, No. 18, 1871. The descriptive paragraph on the back makes no mention of the leg-hold trap, but the expression fixed on the animal's face suggests that Hurst may have intended a degree of editorial comment.

falls, the whole surrounded with rocks, gravel, shrubbery, trees, flowers, etc. to give the birds or beasts their natural place in history."

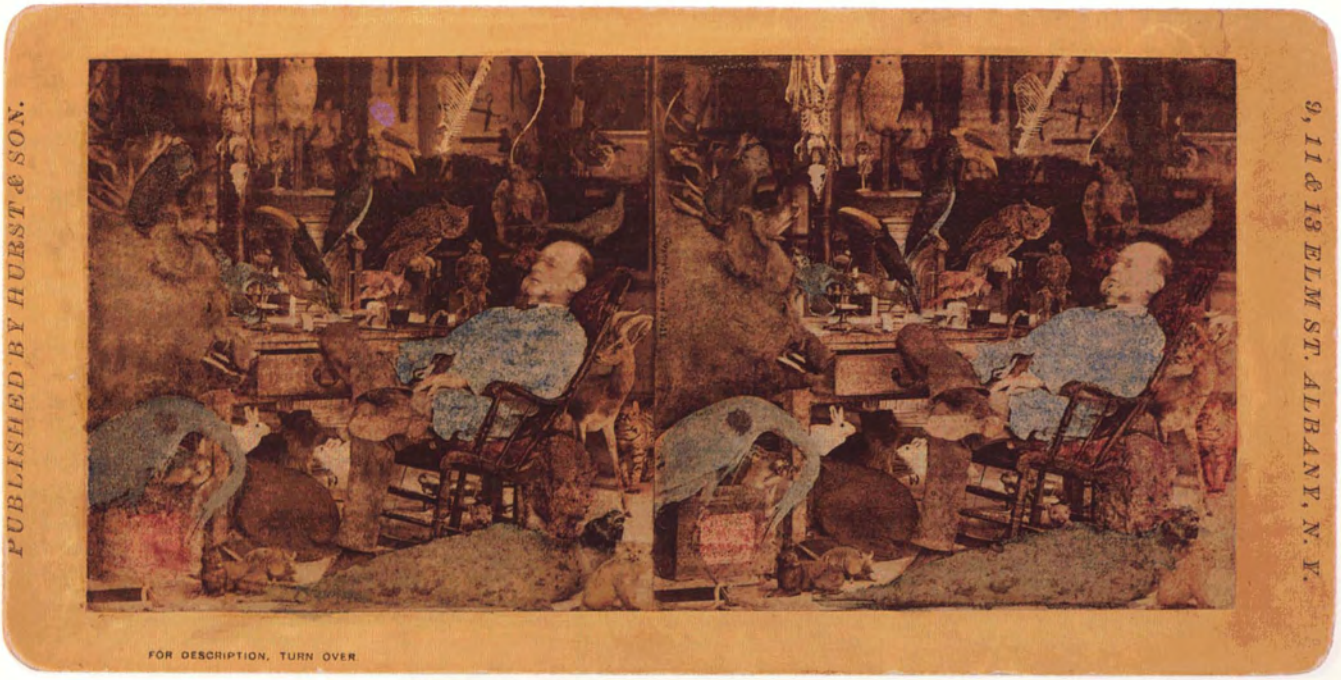
The museum closed in 1874 after only three years of operation, the disposition of the collection unknown. James Hurst worked at the New York State Cabinet of Natural History until two months before his death on December 18, 1882. The New York Times reported that death resulted from "Absorption into his system of arsenic, large quantities of which were used by him in his profession." He was buried at Pottersville Cemetery in an unmarked grave.

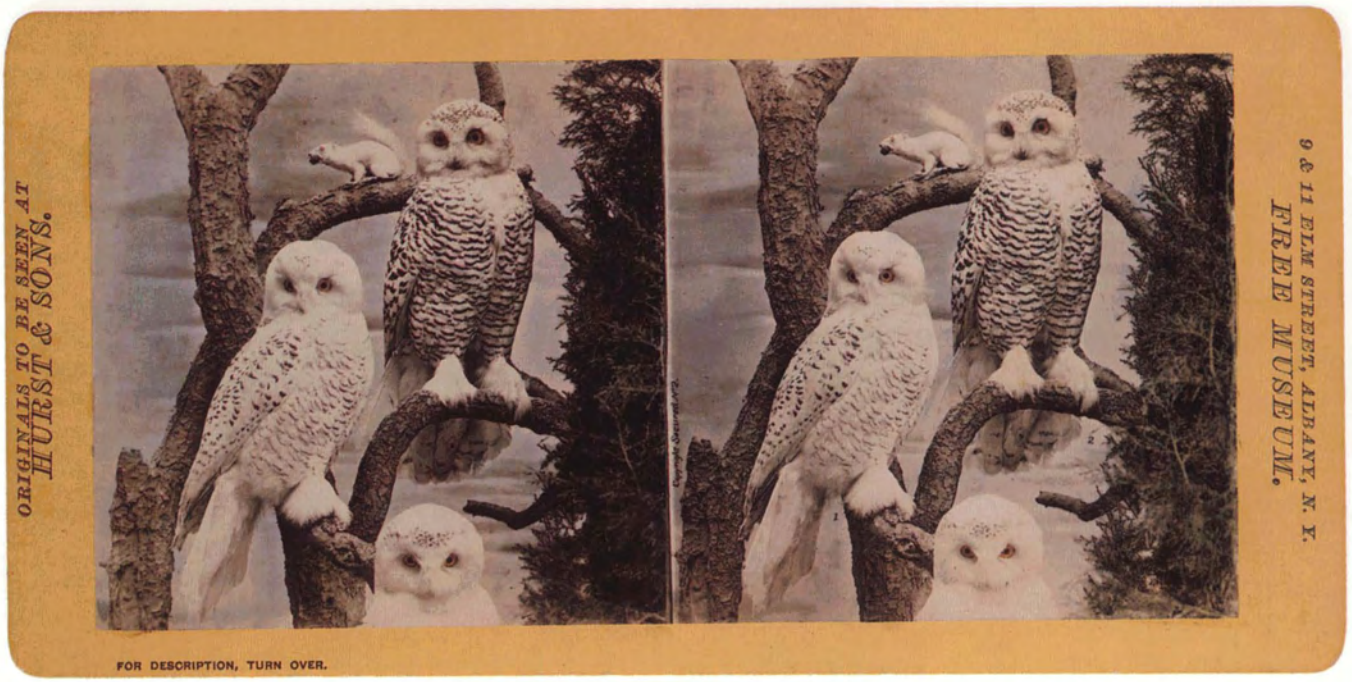
The Hurst Stereographs

Seventy two stereographs were published in two series. The first series started in 1870 with 10 stereographs followed by another 14. Each stereograph was marked: "Entered according to Act of Congress in the year 1870, by James A. Hurst, in the Clerk's office of the District Court of the Northern District of New York" which was the procedure for copyrighting at that time.

After July 1871 another three sets of 12 stereographs each were produced for a total of 60 stereo-

"The Taxidermist's after-dinner dream. 'We thought all nature subservient to our will." J.A. Hurst Second Series, No. 12, 1875.





"The Snowy Owl" J.A. Hurst First Series, No. 2, 1870.

graphs in the first series. The first series contained approximately 200 birds and animals and were described when Hurst in 1870 wrote of his project: "My interest is to exhibit in every view, as nearly as possible, the locality which each specimen inhabits, whether rocks, woods, or waters. All specimens will be colored from the original contained in my private museum." Close examination is needed as the views contain many smaller specimens, lizards, frogs, turtles, etc., that are easily missed. The reverse of each stereograph features the scientific description, a reference to written publications, and a detailed description of the main subjects.

Stereographs were priced at 50 cents each. To put this in perspective, a journeyman craftsman would only make from $2 to $7 per day, so in today's terms a stereograph would cost about $10 or more. Stereographs could be purchased as boxed sets. The boxes were of heavy red paper with brown taped corners and a slip off cover on the right side. The label on the front contained a single tinted picture of display number 24 and included Hurst laying down behind the animals. The sale of stereographs was probably his biggest source of income and may have been his best form of advertising.

Hurst stereographs were very popular at the time and according

"Great Horned Owl" J.A. Hurst First Series, No. 22, 1871.

"Golden Eagle" J.A. Hurst First Series, No. 17, 1871. Realism gave way here to a sense of the dramatic in the rabbit's expression.

to Darrah: "The Hurst series was published about the same time that natural history instruction was introduced in public high schools and the use of so-called visual aid materials was encouraged." Some of the first series stereographs were stamped "For Object Teaching in Schools and Parlor Entertainments." Hurst was one of the first to make boxed sets and to produce stereographs for educational purposes.

The second series of 12 stereographs was devised by Hurst for "Parlor Entertainment" that was popular at the time and displayed animals in amusing, sometimes ludicrous poses that were captioned with phrases of the era such as, "Gorilla, From Africa, Supposed To Be Our Next Of Kin," obviously pointed at Darwin's "On The Origin of Species." With the facility available to Hurst, he undoubtedly produced other stereographs that were never copyrighted.

Hurst's original plan was to produce 24 views of animals and birds of North America, then: "We propose to continue and to add to them a second series of foreign specimens, and a third of various animals in grotesque attitudes never however violating the natural instincts of the animal." You can see this plan was never completed. The first series was all North American specimens and the second series was "Parlor Entertainment." This will explain the use of "First Series" in Hurst's cataloging system.

Variants can be found of the same stereograph number ranging from repositioning of specimens to major scenery changes. Stereograph numbers can be found on either left or right pictures and in various positions within the picture. All of the Stereographs were beautifully hand tinted. The colors appear to be very lifelike and are very consistent from view to view. The source of the tinting is unknown.

All of the Hurst stereographs were made by Eugene S.M. Haines, who owned a photography shop nearby at 478 Broadway. Haines moved to Albany in 1865. During his 18 years in Albany he was said to have photographed just about everyone and everything in the city. Haines published a small series of stereographs containing animals, including some of animal orchestras. One can but wonder if Hurst was not the source for these animals.

The Library of Congress opened in 1875 and a copyright was issued starting with stereographs number 11 through 24 under the name of J.A. Hurst and dated 1871. Similar copyrights were issued for 12 stereographs to J.A. Hurst in 1872, another 12 in 1873, 12 stereographs to Hurst & Son in 1874, and finally noting the second series with 12 stereographs to J.A. Hurst in 1875. The original hand printed index cards are still on file. Two copies of each stereograph were to be deposited with each registration for copyright. The Library of Congress has stereographs number 1 through 24 (of which numbers 1 through 10 were not issued a copyright) and the second series of 12 on file.

In 1883 S.M. Haines sold his negatives to B.W. Kilburn and moved to Boston. Kilburn reproduced the stereographs giving credit to Hurst's copyright of 1870. Kilburn produced tinted and untinted stereographs but the quality was poor and they lacked the detail of the Hurst originals.

Sources

NAHO -Spring, 1976

New York State Museum

Stereo World - Vol. 3 No. 2, May/June, 1976

The World of Stereographs - William C. Darrah

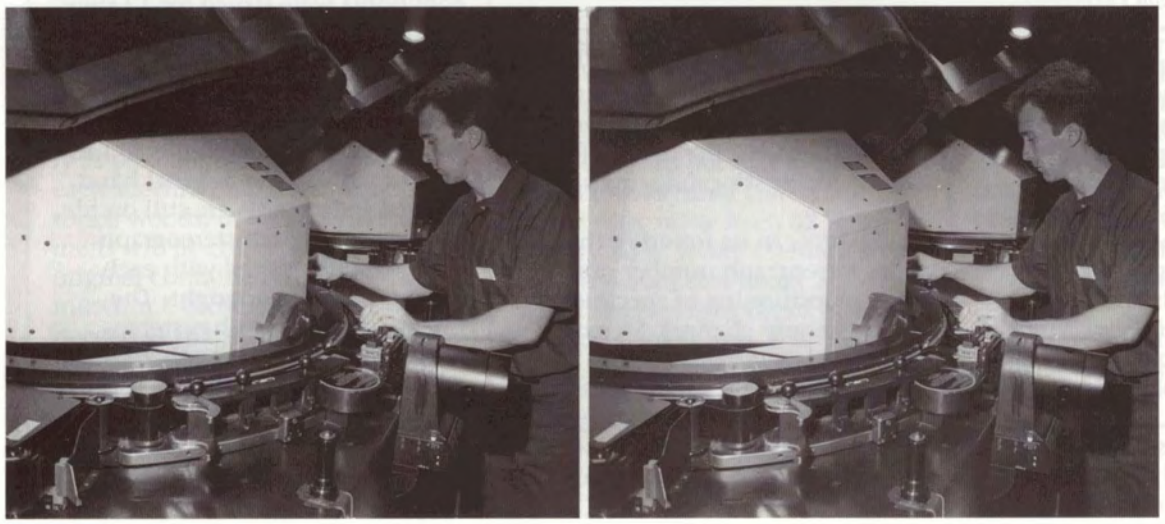
T.K. Treadwell

A complete checklist of Hurst stereographs is available by sending a large SASE to Del Phillips, 1209 Hughes Road, Auburn, KY 42206.

3-D IMAX in Californ

Sometimes bigger truly is better. And everything about Steven Low's *The Last Buffalo* is bigger. Let's start with the oversized 3-D glasses you receive when you enter the huge 980-seat Lockheed Pictorium theater at the Great America theme park in Santa Clara, California. The reason for the large glasses becomes clear when you see the size of the screen, over 70 feet high and 91 feet wide. Paul Vega, Great America's technical supervisor, says the 5-story tall silver screen took two days to paint using automated spraying equipment and a full week to install.

Up in the projection booth, projectionist Howie Goble finishes threading the twin IMAX super 70mm projectors (each the size of a large buffalo) with the film from two massive 4 foot diameter spools. IMAX's unique rolling loop system, which feeds the film horizontally through the projectors in smooth, wave-like motions, makes possible the largest film frame in motion picture history – 70mm, 15 perforation – ten times the size of a conventional 35mm frame and three times larger than a normal 70mm movie frame. Goble presses a button on his control console and the two projectors slide silently forward into position. Another couple of buttons and the house lights dim and the taped introduction begins. One final button and the projectors start, the cue track on one keeping both projectors and the digital sound equipment in perfect synch.



Projectionist Howie Goble prepares to thread the film through the unique horizontal pathway of one of the huge IMAX projectors. (Stereo by Robert Bloomberg.)

The opening shot, a panoramic aerial view of the southern Alberta wilderness, elicits the first of many collective sighs from the audience. Dramatic time lapse shots of clouds and their shadows speeding across sculpted sandstone rocks give way to close-ups of a grazing fawn (more sighs), a ferret cleaning it's den inches in front of your nose, a cougar jumping into your lap, a fish swimming through the hair of the woman in front of you, and an entire cast of extremely appealing, well-groomed, and well-rehearsed animal actors. These bright scenes of nature are contrasted with shots of a dark, medieval-looking foundry. In this "industrial revolution" workshop, amidst smoke, sparks and molten metal, a bearded sculptor (William Lishman) assembles a massive buffalo sculpture, incredibly beautiful yet ominous with its metallic surfaces reflecting the welder's torch and foundry fires.

Director Low, with the aid of a talented crew including stereographer/cameraman Noel Archambault, has elevated 3-D film to a new level of excellence. All the traditional complaints of the past – eyestrain, ghosting, misalignment, and resulting headaches – have been virtually eliminated. Through improvements in polarization, the light loss has been reduced by about 20% compared with the earlier IMAX 3-D film. The large film and screen size makes possible close-up, life-size 3-D effects, the most powerful of any 3-D film in memory.

Low, whose previous credits include the 2-D IMAX films *Skyward* and *Beavers*, describes *The Last Buffalo* as a modern variation of the Noah's Ark theme and man's complex relationship with nature. He and his crew shot nearly 250,000 feet of film (combined

a – The Last Buffalo

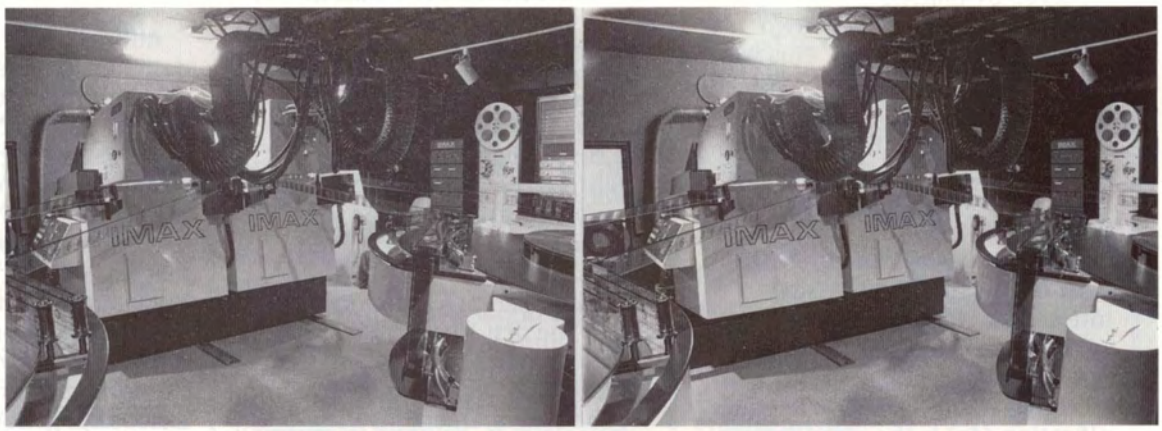
A Review by Robert Bloomberg

left and right images), over 6 hours, edited down to the film's final 27 minute length. Contained in those 27 minutes are some breathtaking images: the crackling sparks of a welding torch cuts seamlessly to an explosion of falling raindrops on a cliff top, a cloud of foundry steam dissolves magically into mist that parts to reveal a majestic trumpeter swan soaring gracefully through a clear sky, its pure white wingtip nearly brushing against your face. (The location shooting of the film was covered in color in the May/June '89 *Stereo World*.)

In such a visual tour-de-force it is easy to overlook the contribution of the soundtrack. But the crisp, hyper-reality of the 6 channel, plus sub-bass surround sound is as large and three-dimensional as the visuals themselves. Each drop of rain, buzz of insect, or crackling twig complements and enhances the power of the enormous 3-D images.

Oddly, despite several more dramatic through-the-window effects, it is a quiet moment toward the end of the film which I found to be one of the most powerful. Following a dramatic fire sequence, the scene once again returns to the foundry, dark and damp, drenched by water, steam billowing off the floors and walls, each drop of water alive and echoing on the soundtrack. The cool darkness of the cavernous IMAX theater perfectly matches the atmosphere on screen, and for a few moments there is no separation between reality and film.

Up in the projection booth, Goble has finished rewinding the two 100-pound reels of the second print of the film. (The two prints alternate every other show.) The film ends, the houselights fade up, and with the push of another button the projectors slide back, the lenses are checked, and the threading process begins again.



Two sets of massive feed and take-up turntables fill the space around the IMAX projectors with moving film. (Stereo by Robert Bloomberg.)

Outside the theater people are still talking about their favorite scenes. "The leaping cougar and the rattlesnake always get the biggest audience reaction," explains Melissa Bader of Great America's public relations department, who has just seen the film for the sixth time. One of our party, Steve, a friend and 3-D film connoisseur who has sampled all the theme park 3-D offerings (Magic Journeys, Captain Eo, and Muppetvision) declares *The Last Buffalo* to be the best of the lot. Another friend, Christine, visiting from Germany, who spent much of the film alternately ducking her head and reaching out toward the screen, still has a look of amazement on her face and is trying to figure out how to convey her first 3-D experience to friends back home. "I will tell them I am swimming with fishes and petting a lion on my lap," she decides, smiling.

The Last Buffalo plays 15 times daily, every 45 minutes, from 10am to 8:30pm (10pm on Saturdays) at Great America Park, Santa Clara, California (40 miles south of San Francisco off highway 101) through October 25th. It is also currently showing at the Vancouver CN IMAX theater through September 30, 1992, and is scheduled at the Montreal IMAX theater at Le Vieux-Port de Montreal from September 28, 1992 to May 27, 1993.

THE LAST BUFFALO (1990)
Executive producer: Susumu Sakane. Producers: Roman Kroitor and Sally Dundas. Produced by Wild World Films Ltd., for Suntory Limited. Directed by Stephen Low. Director of photography: Andrew Kitzanuk. Stereographer and camera operator: Noel Archambault. Distributed by IMAX Corporation.

CURRENT INFORMATION ON STEREO TODAY
by David Starkman & John Dennis

NewViews

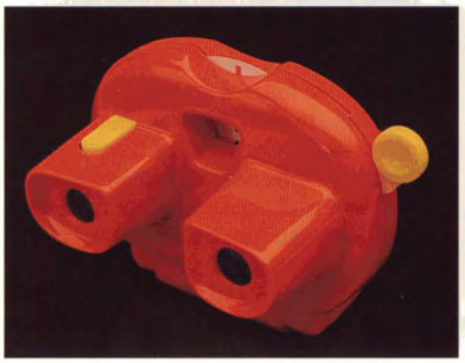
A Lighted View-Master for the '90s

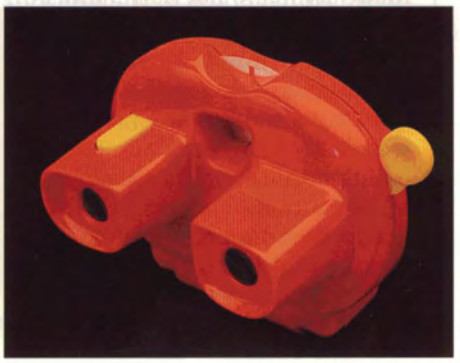
View-Master is introducing the first new lighted model viewer since the discontinuation of the Model H viewer in 1981, and the Belgium-made Model 12 viewer.

The new viewer is unique for View-Master in several ways. It is a "dual-mode" viewer in that it will work both as a hold-up-to-the-light viewer, and as an internally lighted viewer. This has been achieved by placing the light bulb in the center between the two slightly curved diffusers. This way, the diffusers allow light to pass through from the outside for external illumination, but act as reflectors for the internal illumination. Circles and stars are cut out of the body design in such a way that they light up when the internal light is on – to provide visual interest for children.

The body is a bright "da-glo" type of sturdy orange plastic, with a yellow changing lever. The magnification (4x) is the same as the current standard model (too bad!) with very clear, aberration-free optics (at least in the sample we examined).

The light switch is a very conveniently located yellow bar on top of the left eye-tube. Power is provided by two "AA" batteries in an easily accessed swing-down compartment on the bottom of the viewer. This also allows access to the easily changed PR2 bulb. Brightness can be nearly doubled by substituting a Rayovac (or equivalent) K2-2 Krypton high intensity bulb.





A final, perhaps sad, note is that this is the first View-Master viewer to be made in China, rather than in Portland, Oregon or in Belgium. It's the end of an era for View-Master manufacturing in the USA, but the reels are still made here.

All in all, this is a very nicely designed and well constructed unit. While it won't replace my favorite Model D focusing viewer (with its 7x magnification), it is a welcome addition to the View-Master line, and a must-add item to any viewer collection. It also helps to reinforce the fact that View-Master is still a viable and ever-changing product. The stock number of the blister packed version of this viewer is No. 2053. Exact sales introduction date and price are not known at this time, but I'd guess the retail price to be in the $10.00 range.

Anaglyphic Paintings Published

Those who attended the 1987 ISU congress in Switzerland saw some of Dr. László Futó's anaglyphic art, including some amazing tapestries. Now 56 of his anaglyphic paintings can be viewed in his new book *Anaglyph Painting*. Dr. Futó is a member of the Swiss Stereo Society who has specialized in 3-D painting for 20 years. His 112 page book includes an essay on the place of anaglyph painting in the history of art. The text and captions are in German, French and English, and the retail price is SFr.95. Contact the author for ordering information and shipping costs. Dr. László Futó, Am Holbrig 13, CH-8049 Zurich, Switzerland.

*This column **depends** on readers for information. (We don't know everything!) Send information or questions to David Starkman, P.O. Box 2368, Culver City, CA 90231.*

New Nishika Camera Model

While visiting my local camera store recently I was surprised to see a new model Nishika 3-D camera in the second-hand sales display case. I was so amazed that a new model had been introduced without any of our usual "sources" telling us about it, that I made a call to Nishika to get the story.

The new Nishika N9000 (the original one is the N8000) was described to me as a "limited production experiment that was used mainly in conjunction with promotional offers." I couldn't get much more information, but was told that the camera was already "not available" from Nishika. (The N8000 model is, however – see end of article.)

With this much established, my trusty partner Susan evaluated the situation and said "you'd better go buy that used one", which I did, and can now report on.

The Nishika N9000 3-D camera is a much more compact, simple, and "honest" camera than the original model. It lacks the deceptive fake motor drive, fake LCD readout, lead weight, fake electric eye and fake dedicated flash connection of the N8000. As you can see in the photo, it is a compact 5.5" x 2.75" x 2", weighs an incredibly light 8.5 ounces, and looks much like any of the current crop of compact focus-free all plastic 35mm cameras. It has no electronics at all, featuring a single mechanical shutter speed of 1/70 second (versus the Nimslo f/5.6 to f/22 automatic, and the N8000 f/19, f/11 and f/8 manual.) There is a sliding quadra lens cover, thumb-wheel film advance, standard flash hot shoe, and four 34mm lenses. ISO/ASA 200 print film is recommended for outdoors

only, and ISO/ASA 1600 print film is recommended for indoors only. Quite a limitation! The image format is identical to the Nimslo/Nishika standard. The camera seems to be 90% plastic construction and is made in China.

Stylistically the camera is attractive, but I'd still say that if you want a camera of this format the original Nimslo is still the no-question winner in design and technical specifications as a "real" camera. It is interesting that Nishika has even bothered to produce a second model, and I would speculate from my conversation with Nishika, and from examining the camera, that this was definitely intended to be a cheaper camera (cheaper to produce, at least) that they could probably offer "free" along with some type of promotion. As such, it may make for an interesting collectors item, but not a "new, improved" model.

A final note regarding the instruction manual for the camera is that, at the end, instead of the usual free (800) telephone numbers for technical or film processing inquiries, there are two *(900)* telephone numbers which will charge a 95¢ per minute information processing fee!

Lower Prices, Bigger Enlargements

On a more positive note, I got the latest order forms and am pleased to report that Nishika is offering lower print prices. The most current price list shows $4.14 for a 12 exposure (6 print) roll, $8.28 for a 24 exposure (12 print) roll, and $12.42 for a 36 exposure (18 print) roll, plus a flat fee of $2.95 per roll for shipping and handling. These are the lowest prices since Nishika took over the Nimslo printing.

Reprints are $1.75 each for 3.5" x 4.5" prints and $8.95 for 8" x 10" enlargements.

Nishika has a commercial division which now offers even larger prints. Size 16" x 20" prints are $85.00 each, and 20" x 24" prints are $150.00 each. The 16" x 20" and 20" x 24" sizes can also be ordered as transparencies for $5.00 less (each) than the print price. I suggest that you call Nishika at (702) 435-9000 to request current price lists, order forms, and mailing envelopes before sending in any film.

Nishika Now Sells Direct

In spite of the multi-level marketing scheme, Nishika now will send you a price list to order the camera directly. The N8000 model is listed at $249.95. Call (702) 435-1599 for information or an order form.

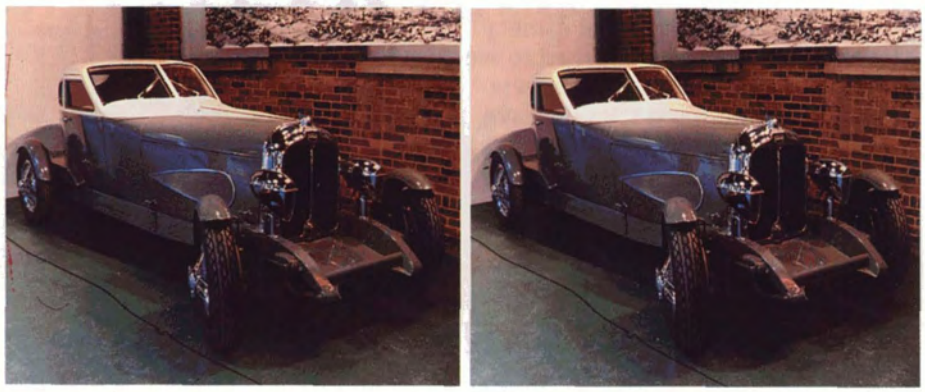
Realist Repair Manual

Noting last issue's feature on the Realist Custom, NSA member Ed Romney wrote to remind readers that his *Realist Repair Manual* is still available. The price is $18 plus $4 shipping, and he accepts Visa and Mastercard. His new address is Box 96, Emlenton, PA 16373.

NSA '92 View-Master Reels

The three-reel View-Master packet made for the 1992 NSA convention this August in Fort Wayne, Indiana is now available by mail for those who were unable to attend. Unlike the old style commemorative packet designed for the 1989 convention in Portland, this set is in a standard blister-pack card of the "Scenic America" style. Inside the outline U.S. map, "NSA NATIONAL CONVENTION Fort Wayne, Indiana 1992" appears in red letters, and titles from the reels are printed on the back of the card.

Reel A features 7 outstanding views inside the Auburn, Cord, Duesenberg Museum in Auburn, Indiana stereographed by Wolfgang Sell. Both vintage auto and stereo enthusiasts will easily find the set worth ordering for this reel alone. Those who visited the museum as part of the 1992 NSA convention tour will probably find the stereos on this reel much better than they were able to shoot themselves in the busy two-story building packed with rare and classic cars.



"1929 Auburn Cabin Speedster Prototype" is Scene 6 from Reel A of the 1992 NSA View-Master 3-reel set. Like several of the cars in the museum, this is a priceless, one-of-a-kind gem. (Stereo by Wolfgang Sell.)

Reel B offers collectors excellent copies of 1870s San Francisco views from Watkins' New Series. These street scenes, including two of cable cars, are among the most prized of Watkins' images and leave you wishing there were more reels like this. The one interior view shows the tables, gaslights and decor of a Chinese restaurant in dramatic stereo.

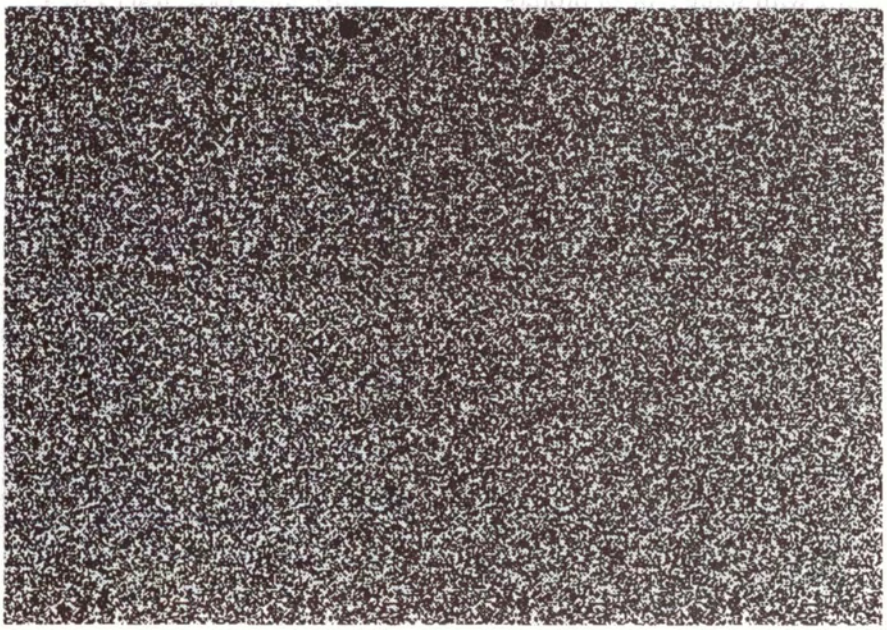
Reel C takes View-Master collectors on a tour of the viewer assembly line in the Portland plant through stereographs by Wolfgang Sell. Scene 7 is a particularly good view of the William Gruber Memorial on the grounds of the View-Master plant.

The 1992 sets are $5.00 including postage from NSA, PO Box 398, Sycamore, OH 44882.

Dots Spread by Mail

The latest format for single-frame random dot stereograms is the 4 x 6" postcard. Along with random dot posters, calendars, puzzles and do-it-yourself computer programs, N.E. Thing now offers a set of 8 black & white random dot "STARE-E-O" 3-D postcards with images similar to the sample seen here. Now you can confuse, frustrate, delight or educate your friends while convincing the post office that coded messages are being transmitted. A very brief freeviewing instruction is printed on the message side of the cards, along with the N.E. Thing phone number for those who give up in desperation .

The card sets are $5.00 including postage from: N.E. THING Enterprises, Box 1827, Cambridge, MA 02139.



5-Lens 3-D for 220 Film

The makers of the Image Tech 3-D 1000 camera (*SW* Jan./Feb. '91, page 26) have announced the introduction of a new "professional" version of the lenticular print camera. It will use 220 roll film to record images from five 125mm lenses in the 645 format. More information on the new camera (called the Image Tech PRO645) will be presented when it becomes available.

Shooting the Shooting

Robocop 2 in 3-D

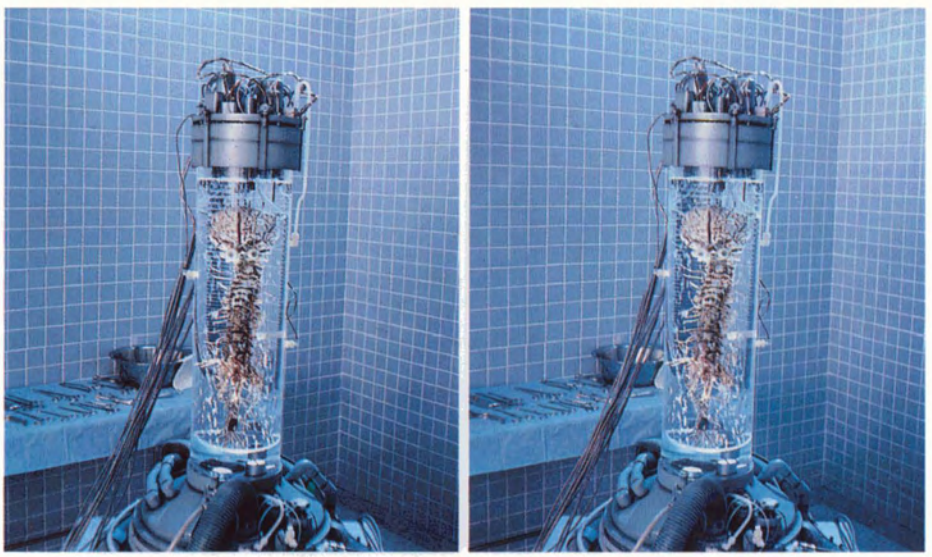
by Craig Busch

When I got hired to work on "Robocop 2", I decided to photograph the entire production in 3-D. It was a big-budget special effects movie that had a lot to photograph. My idea was to shoot 3-D on the set everyday during the 4 month shooting schedule to try and produce a View-Master set of the movie. I had an opportunity that View-Master could not afford – of having a photographer on the set every day.

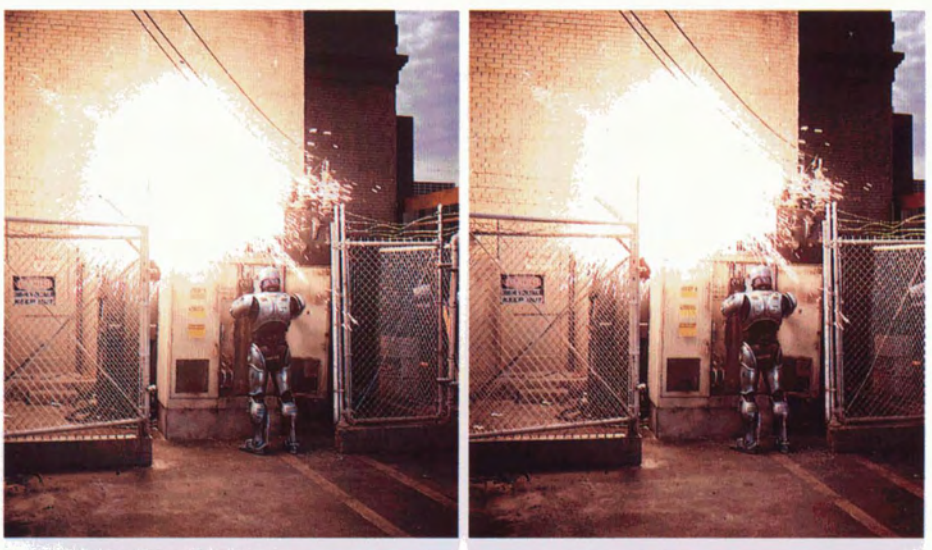
I got cooperation and support from the producer, the publicist, and the still photographer, who gave me countless rolls of film and allowed me the privilege of shooting in areas that normally would only have been available to her.

I carried two stereo cameras with me at all times – a Realist Custom and a Realist 2.8. Since we shot indoor and outdoor, day and night, I usually loaded one with Ektachrome 160 (tungsten) for indoor or night, and the other

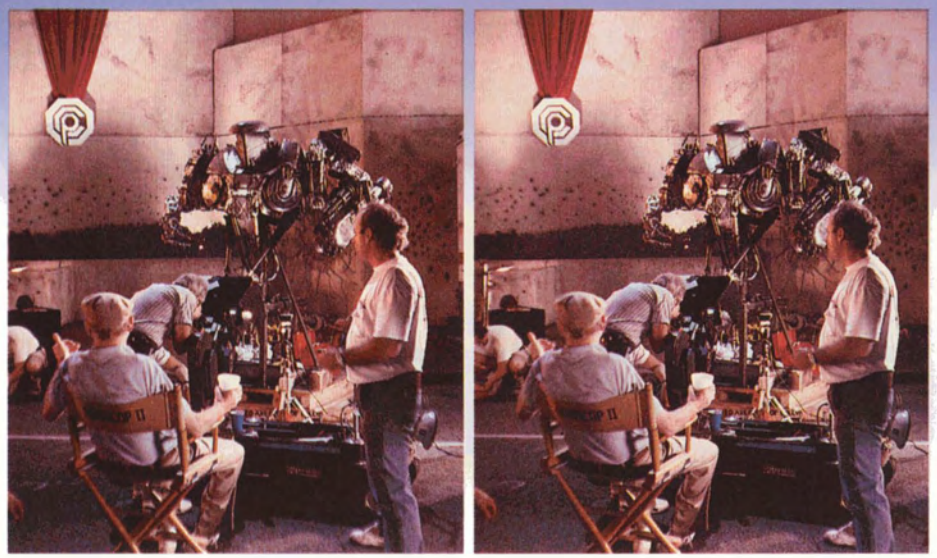
Interesting stereography often depends on being in the right place at the right time. As location manager for the filming of "Robocop 2" in Houston, NSA member Craig Busch was able to get a series of stereo slides that he called "A Present Day Look at the Future" when projected at the 1991 NSA convention in San Antonio. We knew it would make an interesting article, and one worth saving for the next available space in a color issue.



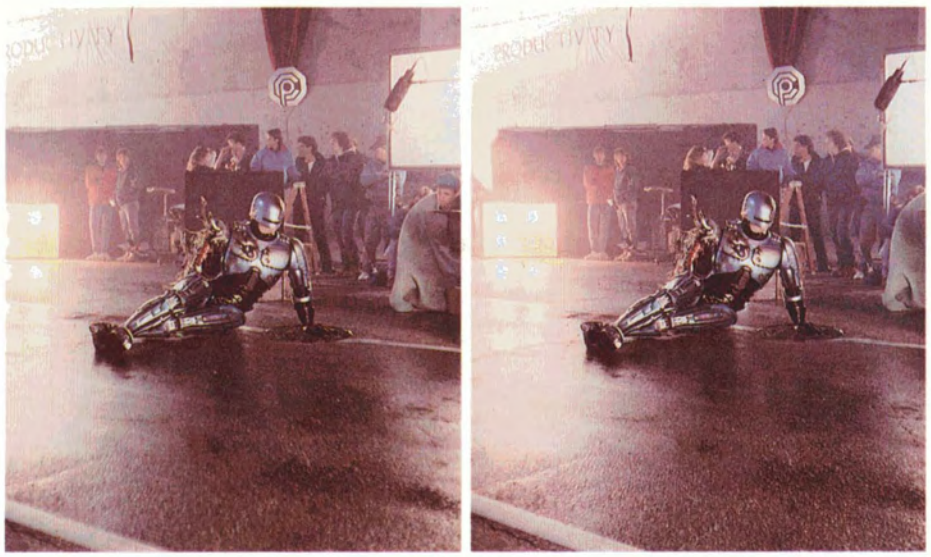
Brain floating in its tank.



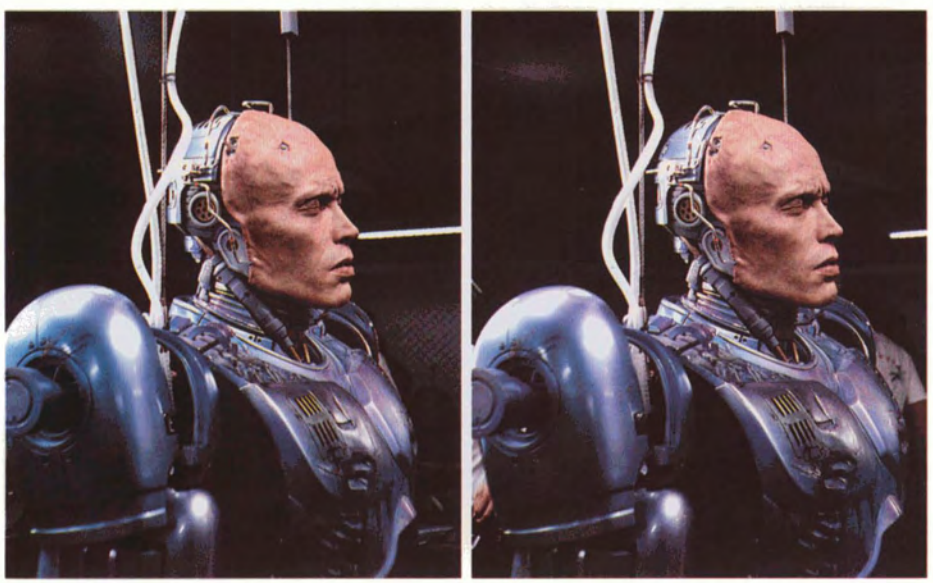
Robocop and exploding transformer.



Director watching set-up with Robocop 2.



Robocop destroys brain in street.



Close-up of Robocop puppet.

with either Ektachrome 400 or Kodachrome 64 for daylight, depending on the lighting conditions.

During the first three weeks, we shot the final battle scene outside at night in front of the Wortham Theater. This required Ektachrome 160 pushed two stops to 640 and shooting most shots at ½5 second at f/2.8. Later indoor shooting in the lab and the Robochamber only required a one-stop push to 320 which produced a sharper, less grainy image.

Every day, I would go through the shooting schedule and select scenes that would be good for a condensed story on a View-Master set. Some scenes like the brain floating in a tank, kept getting rescheduled. They finally shot it on the stage one day while I was gone. I returned to find them about to dismantle that set. I convinced them to wait ten minutes while I shot a roll of it.

One shot that I wanted was a close-up of the steel spike in Robocop's hand. For this, I had to enlist the help of the Roboteam who operated all of the special Robo parts. One day when they had the special prop out, I asked them to set it up in front of a computer bank. They did, and I shot it coming out through the stereo window.

Another interesting prop was the full-size articulated puppet of Robocop dismantled as created by Rob Bottin. It took nine puppeteers to operate it. It could move its head, open its eyes and mouth, move its arms, and ask to see an agent. Even a close-up 3-D shot looked completely real. Until the day that it showed up on the set, no one had any idea how amazing and realistic it would look. There were so many people crowding around it that I had to wait until lunch to shoot some "clean" shots of it.

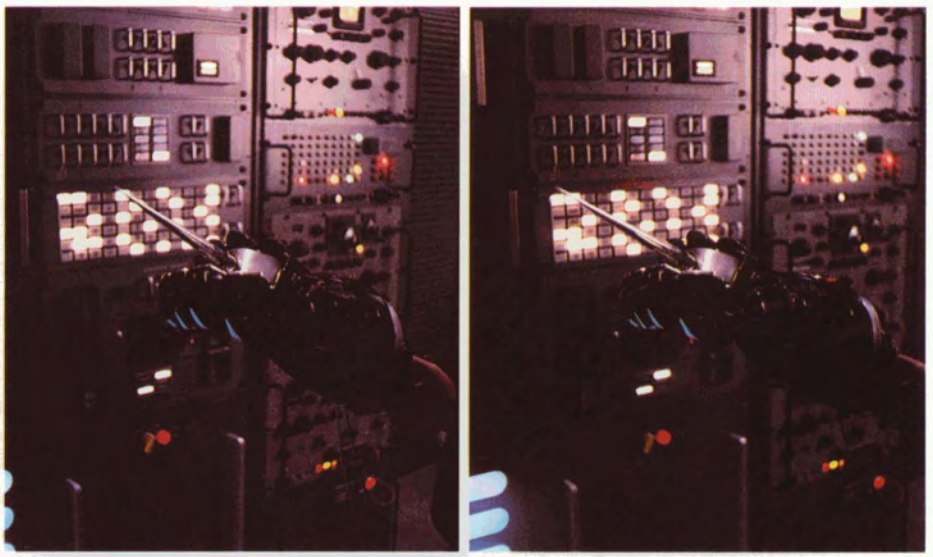
The most difficult shot of all, however, was the special make-up of Peter Weller without his helmet on. This make-up took 4-6 hours to apply and we only filmed him twice in it for about three hours each time. The problem was that Peter had become more difficult about anyone but the still photographer shooting his picture on the set. When he had the Robo helmet on, he usually couldn't see well enough to notice me shooting pictures. But with his helmet off, I would be quite obvious.

I asked one of Peter's assistants to relay a message to him. If he would allow me to shoot some 3-D shots of him without his helmet on, I would give one of them to him with a viewer. He agreed without really understanding what it was I wanted to do. Later, I gave him one of the shots with a steal-the-light viewer and he was, in his assistant's words, "blown away" by it.

In all, I shot 20-25 rolls of film in 3-D and was even planning to shoot some close-up stereo of the miniature sets that Phil Tippett was animating in San Francisco. I talked to the Robocop Merchandising company and found that they were in favor of doing a View-Master set, although they warned me that View-Master had rejected this idea on both the first Robocop and the Robocop cartoon series, citing the violence and the R rating.

I tried everything to convince View-Master to produce the set, but in the end, our goals were quite different. I wanted to produce a good quality View-Master set of a movie, featuring actual 3-D photography done on the set. They wanted to keep Disney, their major client, happy. And producing a set of an R-rated movie was not their idea of doing that. Still, it was fun to shoot and is always fun to show whenever possible.

Peter Wellar as Robocop, without the helmet.

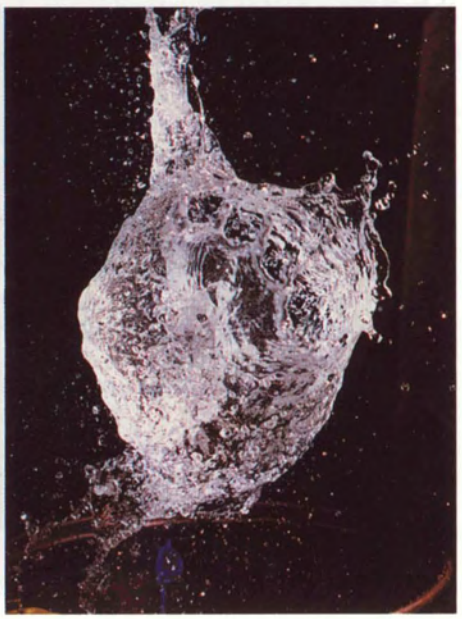


The steel spike springs from Robocop's hand.

Finale of Robocop 2.

"Water Balloon in Early Pop" was triggered by a microphone within inches of the balloon to capture the initial split in the balloon and its effect on the water. Dual Spotmatics and Ektachrome 100. All stereographs by the author.

"Water Balloon in Late Pop" With the microphone moved farther from the balloon, it is seen completely burst in half with the water frothing outward everywhere except along the outline of the initial split by the dart.



"Water Balloon in Very Late Pop" was made with the microphone about 7 feet away, where it missed the sound of the pop and didn't fire the flash until it picked up the sound of the dart falling into the pan under the balloon. Captured was this still balloon-shaped mass of water, opened in free-fall like the cocoon of some ravenous alien insect.

High-Speed Stereo

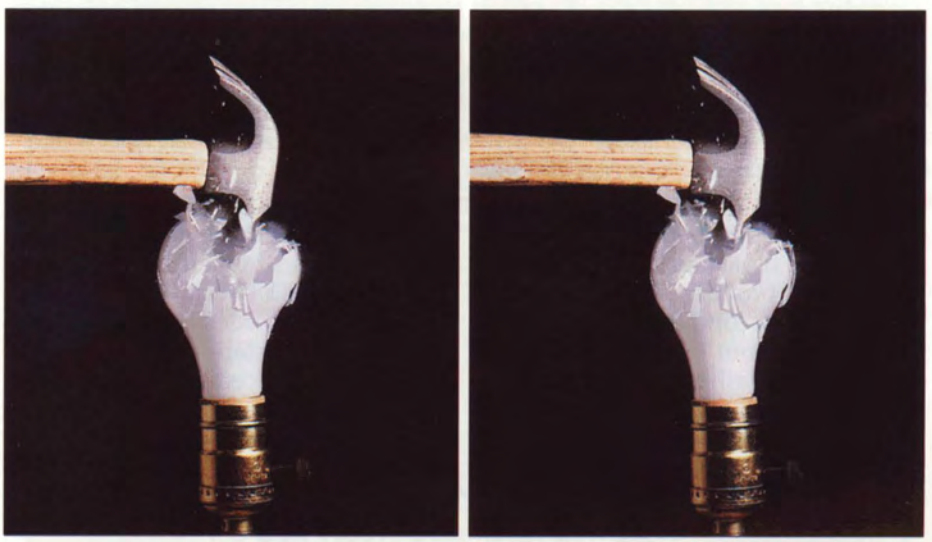
by Franklin J. Flocks

When the late Harold Edgerton of MIT developed the strobe flash back in the 1930s, he immediately started using his invention to make things visible which had never been seen with the naked eye. The public was amazed to see pictures of bullets going through playing cards, balloons popping, footballs being compressed by the foot of a kicker at the moment of impact, and milk drops forming a crown shape, upon impact with a saucer of milk.

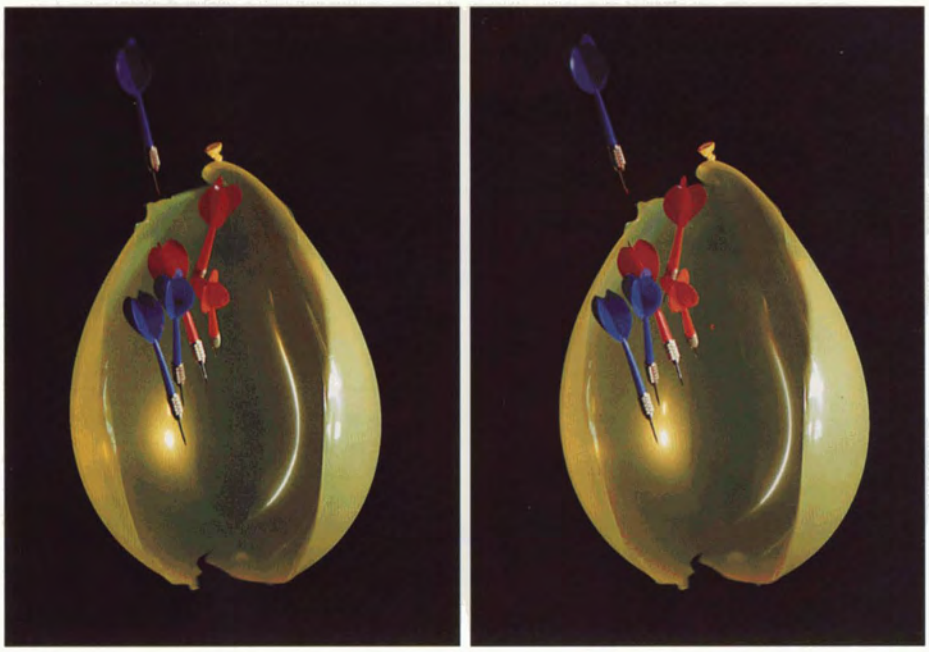
The addition of 3-D adds to the surreal effect of high-speed photography. Fortunately, high-speed photography is remarkably easy and inexpensive to do. Any camera can be used, so long as it has a provision for making time exposures (a "B" or "T" setting.) The action-stopping effect is achieved by using a strobe flash in a darkened room and a triggering device that sets off the flash at the proper time. Triggering devices generally fall into three categories: *sound* triggers that set off the flash when a noise is made, *electric eye* triggers that set off the flash when an object passes through a light beam, and *mechanical* triggers that use a trip wire or similar device. All of the views on these pages were taken using a sound trigger. For example, in the balloon photos, the camera was focused on the balloon, the room lights were turned off, and the camera shutter opened. The dart was then thrown, and the sound of the balloon starting to break was picked up by a microphone. The signal from the microphone was fed through an amplifier which was connected to a "Silicon Controlled Rectifier" (SCR) which is a transistor-like device that acts as an electronic switch to fire the flash. The shutter was then closed and the room lights turned back on.

Sound travels at about 1000 feet per second. Bursting balloons and light bulbs may be photographed at any stage of collapse by moving the microphone closer or farther away. For each foot the microphone is moved away from the sound source, the photograph is taken about 1/1000 of a second later. With my equipment, if the microphone is placed about six inches from a collapsing balloon, the picture will show a balloon which is just beginning to burst. At four feet, the balloon appears almost completely shriveled up.

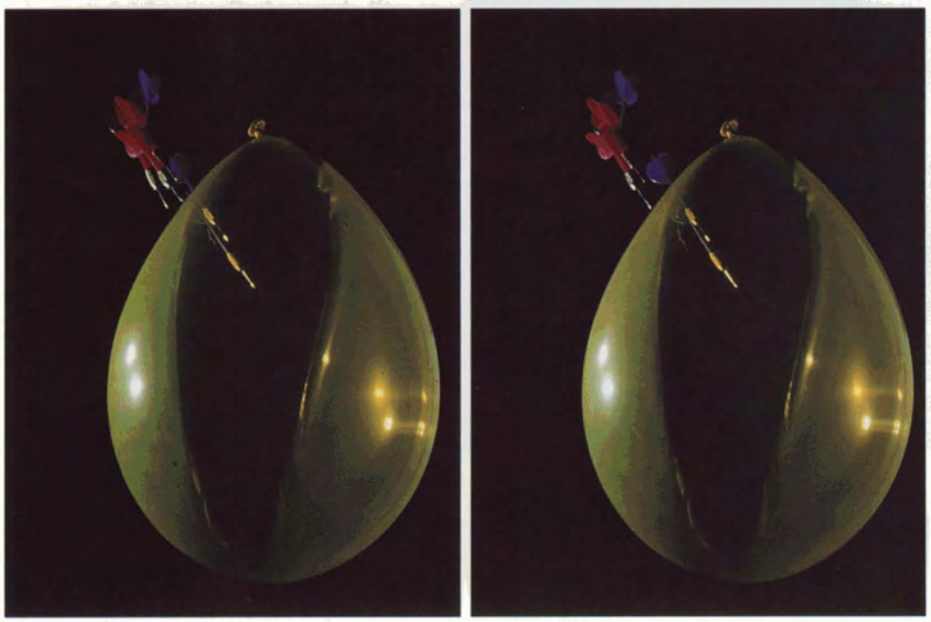
Most modern flash units contain a thyristor photo cell circuit, which is used to control exposure by reducing the light output when the flash is moved closer to the subject. The reduction in light output is accomplished by shortening the flash duration rather than than by reducing the brightness of the light. (The photo cell senses reflected light returning from the subject. When enough light hits the photo cell to indicate a proper



"Light Bulb Smash" was taken with dual Spotmatics on Ektachrome 200.



"Air Balloons and Multiple Darts" captures this balloon in mid pop, half of it still perfectly inflated by the air now rushing out. Stereo Realist with Ektachrome 100.



"Rear View of Air Balloon Popping" provides a fresh angle on the usual popping balloon shot, in addition to being in 3-D. Stereo Realist with Ektachrome 100.

exposure, the thyristor cuts off the flash.) A typical consumer flash unit will produce light for about 1/1000 of a second at full power, but only for about 1/30,000 of a second when the flash is brought very near the subject. This fact makes ordinary consumer flashes ideal for taking high-speed photos of the type seen here. (Many flashes also have manual reduced power settings, which also work by shortening flash duration.)

My high-speed equipment is the ultimate in simplicity. I use the amplifier in a twenty year old cassette tape recorder to trigger an SCR. When a standard cassette tape recorder is placed in the "record" or "record - pause" mode, sound from the microphone will feed through to the earphone jack, so that the recording can be monitored. I simply cut off the earphone and replaced it with an SCR, which I obtained from an electric supply store for about one dollar. (Radio Shack, for example, sells a heavy duty SCR for $1.19, catalog number 276-1020.) I then cut off the end of a PC cord from a flash and connected the two leads to the SCR.

An SCR has three terminals; an Anode, a Cathode and a Gate. The positive terminal of the PC cord goes to the Anode and the negative terminal goes to the Cathode. If the polarity is correct, the flash (if it is charged up) will fire once, as soon as the second PC lead is connected to the SCR. The two earphone leads are then connected to the Cathode and to the Gate of the SCR. (The polarity of these leads does not appear to be important.) The tape recorder's record level or earphone level control is used to set the sensitivity of the sound trigger. For the air balloon shots it was possible to set the sensitivity very low, because the balloons made a loud noise when they burst. The water balloons made much less sound, and it was therefore necessary to turn the sensitivity up – which made the flash likely to fire at the wrong time.

I can't guarantee that this simple circuit will work with everybody's equipment, but the Radio Shack SCR mentioned above requires about 25 milli-amps to trigger it, which is slightly below the middle range of power that can be expected to be produced by the earphone jack of a consumer cassette tape recorder. Cassette recorders with manual record levels controls are likely to work better than those with automatic record level control because of a cleaner signal.

Three words of CAUTION are in order for anyone attempting to build a sound trigger: *First*, battery powered flash units contain a storage capacitor with a high voltage circuit. Never disassemble one unless you know exactly what you are doing. *Second*, while the voltage going from the flash to the PC cord is at a safe level on most modern flashes, I can't promise you that your particular equipment will not expose you to dangerous voltages if you start cutting wires. *Third*, if you hook the SCR up wrong and start feeding current from your flash unit directly into your tape recorder's amplifier, you

could damage the amplifier – so don't use an expensive tape recorder.

My primary flash is a Honeywell Strobonar 780. This was one of the first Honeywell flashes with a thyristor type circuit. After it flashes, even when it is brought close to the subject, it takes about 10 seconds to recycle because it always fully discharges its capacitor, regardless of how much energy is needed to take the picture. More modern flash units retain the unused energy, and can fire again almost immediately if the initial flash doesn't fully dissipate the charge in the capacitor. As a result, modern flashes that are triggered by the simple SCR circuit described above can cause double exposures if the microphone senses more than one sound. (For example, the sound of glass breaking, followed by the sound of glass hitting the floor.) Doubtlessly there are more sophisticated circuits that can prevent this from happening.

Most of the stereographs shown here were taken using a second flash (triggered by a slave unit) in order to increase the amount of light reaching the subject, without an increase in the duration of the light. I have found that standard slave units operate so quickly that they don't cause any appreciable blur with the kind of [closeup] pictures that I take.

I use a variety of cameras: a Stereo Realist, a Nikon F3 with a beam splitter, two Honeywell Spotmatics bolted together through the tripod sockets, and most recently a Nimslo. Nimslos don't have a B or T setting, but if the batteries are inserted backwards into the Japanese version of the Nimslo, the shutter will stay open (at f/5.6) for as long as the shutter release is depressed. (For some reason, this won't work on the U.K. version of the camera.) With a suitable cable release to keep the shutter open, and a plus 2 closeup lens placed over the center two lenses of the camera, a Nimslo can be used to take excellent high-speed 3-D closeup views. (The manufacturer does not recommend putting the batteries in backwards because of possible damage to the camera – but so far I have had no problems with my Nimslo.)

PRECISION FOLDING STEREO VIEWER

For all standard Realist 3D stereo slides. Glass or cardboard mounted. Folds flat, weighs only 1 oz. Prepaid minimum order $10.00. Add $1.00 for shipping and handling. FREE CATALOG AVAILABLE.

TO ORDER CALL TOLL FREE
800-223-6694
MAJOR CREDIT CARDS ACCEPTED.
MINIMUM ORDER $20.00

$2.40 ea. LESS IN QUANTITY

TAYLOR MERCHANT CORP. 212 West 35th Street • New York, NY 10001

LIMITED EDITION viewmaster reel
CUSTOM-MADE PROMOTIONAL ITEM made for the
WILL VINTON PRODUCTIONS SPECIAL
"A CLAYMATION EASTER"
$15 signed by WILL VINTON or $8 unsigned
Send a self-addressed, stamped envelope
and a check or money order to:
Will Vinton Productions
Attn: Juli- Artline Dept.
1400 NW 22nd Ave.
Portland, OR 97210

Explore the World of Stereo Images

Please enroll me as a member of the National Stereoscopic Association. I understand that my one-year subscription to *Stereo World* will begin with the March/April issue of the current year.

- ☐ U.S. membership mailed third class ($22).
- ☐ U.S. membership mailed first class for faster delivery ($32).
- ☐ Foreign membership mailed surface rate, and first class to Canada ($34).
- ☐ Foreign membership mailed international airmail ($48).
- ☐ Send a sample copy ($5.50).

Please make checks payable to the National Stereoscopic Association. Foreign members please remit in U.S. dollars with a Canadian Postal Money order, an International Money Order, or a foreign bank draft on a U.S. bank.

Name

Address

City State Zip

NSA National Stereoscopic Association
PO Box 14801, Columbus, OH 43214
The Only National Organization Devoted Exclusively To Stereo Photography, Stereoviews, and 3-D Imaging Techniques.

Shooting Sta

New Natural History Fi

by Do

Surprisingly, the big 3-D news of 1992 did not originate at Expo 92 in Seville, Spain. True, 3-D was represented (more in a future issue) but the innovative 3-D events happened in Sudbury, Canada and in Poitiers, France, at two world-famous science and communications centers. In late spring, two 3-D films, *Shooting Star* and *3-D Safari*, featuring the talents of Canadian stereographer Noel Archambault opened to enthusiastic audiences and critical acclaim.

Archambault's short but meteoric career includes first camera assistant credits for the IMAX film *Niagara: Miracles, Myths and Magic*, and for *Transitions*, the first IMAX 3-D film. In 1990, he was IMAX location director/camera operator for *At the Max*, the definitive Rolling Stones concert film. The 3-D films that established his reputation as a respected stereographer were *The Last Buffalo* in IMAX 3-D and *Echoes of the Sun* in IMAX SOLIDO, the two runaway film hits at Expo 90 in Osaka, Japan. (*Stereo World* Mar./Apr. '89 and Sept./Oct. '90.) In 1992 Archambault has done it again. He had not one, but *two* 3-D films open within a month of each other – a rare achievement!

Sudbury's Shooting Star

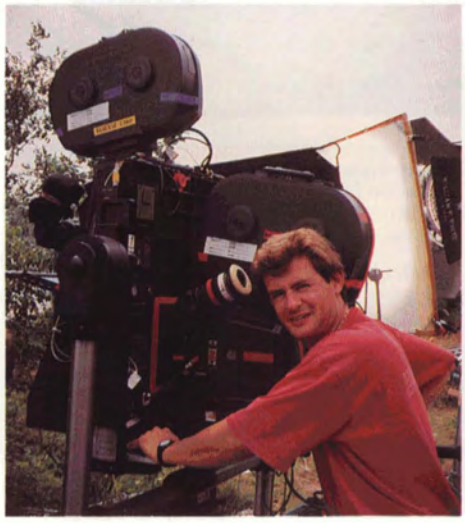
Science North in Sudbury, Canada is sold on 3-D. After featuring an eight-year run of *Wilderness* (*Stereo World* Jan./Feb. '85), the acclaimed 70mm dual-projector 3-D film that opened the center in 1984, Science North introduced a revolutionary new 70mm film in June of this year.

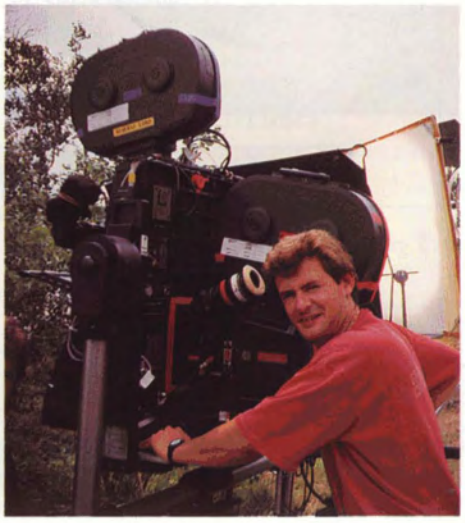
Shooting Star combines just about every form of leading-edge film technology imaginable: the heightened pictorial quality of 70mm images, 3-D laser imagery, realistic 3-D computer animation graphics, special theatrical effects including lasers in the auditorium, and a 16-track system that reproduces every sound with stunning fidelity. More good news? It all works!

In the wrong hands this technological combination could be overwhelming, but director/writer David Lickley, director of photography Harry Lake and stereographer Noel Archambault have collectively created an informative and entertaining film that pushes 3-D to the limit. *Shooting Star* was produced by Walter Woloschuk, who heads Walleye Productions Inc., a Toronto-based company working in a variety of production media including documentary and commercial films and music videos.

Wilderness was a tough act to follow admits Lickley, the senior producer of Science North. "The Christopher and Francis Chapman film (Brian Holmes was stereographer) was incredibly popular and many people returned to see it again and again. That film was a first-time 3-D experience for most visitors. People who live in northern Ontario don't often get a chance to see 3-D, nor do most people from other parts of the province and country for that matter. There was no question that our next film would be in 3-D, and it would include new technology like 3-D laser imagery and computer animation."

Like the center itself, *Shooting Star* reflects the importance of scientific inquiry and respect for the





Noel Archambault with the Hines StereoCam (NewViews, July/Aug. '90) and CP-65 cameras used to film Shooting Star. *(Stereo by Robert Gagne.)*

r / 3-D Safari

ms With Drama & Depth

arren

environment. The film celebrates, not only the culture of native people, but also the traditional values by which man lives in harmony with nature.

"The story is one we wanted to tell for a long time," says Lickley. "Sudbury, which is the nickel capital of the world, is built on top of this wonderful geology which we've tried to explain in our exhibit area. We always wanted to do something on a larger scale to explain the formation of this part of the earth because it's a fascinating story."

Shooting Star explores nearly five billion years of geological history, culminating with the earth-shattering impact of a giant meteorite (done with computer animation) believed to have formed the Sudbury Basin where rich minerals are still mined today. The film features two characters, an Ojibwa elder (actor Gary Farmer) who embodies traditional values and a deep understanding of the past, and his granddaughter (actress Sharon Petahtegoose), a young, imaginative girl from the city who has rarely been exposed to the traditional way of life or to the wilderness. The elder wants to pass his understanding of nature to this highly skeptical girl, and together they set forth on a journey of discovery and environmental appreciation.

"The film is a marvelous marriage of science, education and drama in an entertaining and believable story," says Archambault. "Most 3-D films shown at science centers and special theme parks are documentary or science films, with the occasional vignette featuring brief appearances by actors or athletes. The human drama that develops in this film between the two central characters allowed me to vary the lenses from

Ontario Funds 3-D Research

Without *major* funding from Canada's Ontario government, it's doubtful that quality 3-D 70mm films like *Shooting Star, Wilderness* and *Ontari-o!* would have been made. (The federal government and private sector assisted with financial backing.)

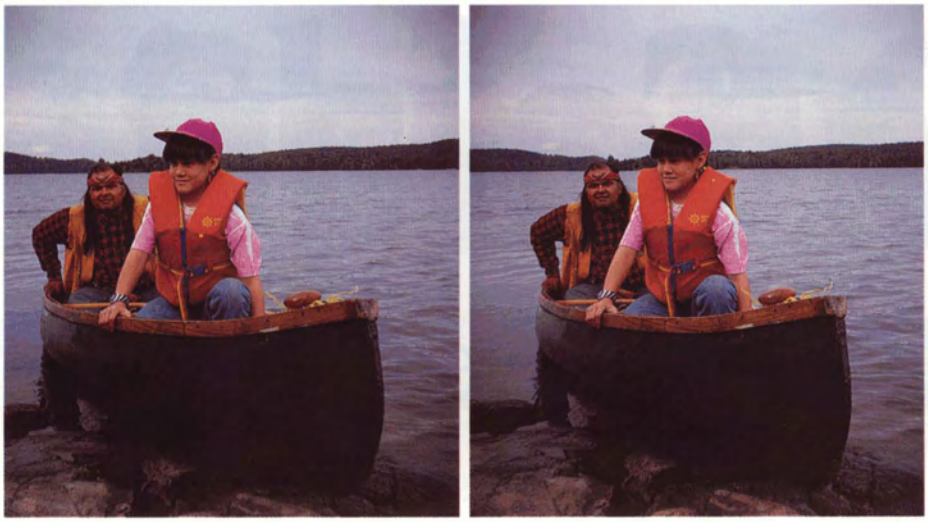
The Ontario government, through the Ontario Technology Fund, is currently participating in the funding of research for IMAX SOLIDO, the wide-field dome screen 3-D experience from Imax Systems Corporation. The government is matching the company's 4.5 million (U.S.) investment for research over the next five years into every aspect of the SOLIDO system, including the camera, unique projection, electronic liquid crystal glasses, digital sound, dome screen, computer graphics potential and film processing.

"At Imax, our long-standing commitment to research and development is at the heart of our ability to be a significant exporter of Canadian technological innovation," said Fred Klinkhammer, Imax's President and chief executive officer, when the announcement was made last year. "The Ontario government's decision to match our investment will ensure the commercial development of a brilliant 3-D concept. Support from the Ontario Technology Fund means that a Canadian technology can now establish a 3-D commercial niche in the highly competitive global marketplace."

Associates in the project include the University of Ottawa, the University of Toronto, the University of Waterloo, the National Research Council of Canada, Litton Systems Canada Limited, C and V Engineering, and Sonics Associates Inc., the Imax sound design and manufacturing subsidiary.

A large portion of the research will take place at Imax's new facility in the Sheridan Park Research Community in Mississauga, Ontario (near Toronto). John Shaw, Imax's project manager for the new Sheridan Park operation and for the Technology Fund research program, will coordinate the ongoing activities between Imax engineers and the numerous associates critical to the project.

3-D is alive and well in Canada!



"You're going to need all of your imagination," Shooting Star's *grandfather (Gary Farmer) tells his granddaughter (Shannon Petahtegoose) as they begin their journey through the lakes, rivers and geology of northern Ontario. As they encounter present day wildlife, he conjures up ancient life forms (through 3-D laser animation) which appear in the air before them. Black Lake, Whitefish Indian Reserve, Sudbury, Canada. (Stereo by Noel Archambault.)*

45mm to 150mm. Visually, the wide variety of closeups and wide shots make for a much more interesting film." For a comparison, Archambault points out that the IMAX film *The Last Buffalo* was shot with just wide 50mm lenses, and regular IMAX films are shot with standard 40mm landscape lenses.

For *Shooting Star*, the "Stereo-Cam" rig came from Hines Laboratory in Glendale, California. The CP-65 65mm cameras, the same ones used in Showscan films, came from Cinema Products. With the cameras, the rig weighed about 240 pounds (the head weighed another 100 pounds) and was surprisingly flexible and easy to use says Archambault. His interocular adjustments were 0 to 4.5 inches and convergence was infinity to 4 feet. The camera configuration was the same as an IMAX 3-D set-up. The right camera sits straight forward while the left is basically pointed at the ground. Both cameras shoot into a beam splitter: the right sees through the splitter, the left gets its inverted image off the mirrored surface. Since the film format operates vertically, the left camera operates in reverse to avoid doing optical printing with the left-eye images.

Shooting Star cost about $1.8 million (U.S.). More than half its budget was financed by the Ontario Ministry of Culture (see following story) and the rest by the federal government and private funding. It was in production for two years. Actual filming began in May, 1991, and continued until September. During that period, the film crew traveled to Australia and Iceland. In Australia an underwater sequence depicting the Great Barrier Reef was filmed looking into a 6 x 6 x 4½ foot deep tank at Queensland Heron Island Research Center, a university research station. The tank included brightly colored coral and invertebrate life such as jelly fish, comb jellies, sponges, etc., representing the Silurian period about 450 million years ago.

In Iceland, the iceberg fields were photographed for the Ice Age sequence, while a desolate volcanic landscape and a steaming, bubbly mud landscape were photographed for the primordial period of time. Shooting was completed at the Whitefish Indian Reserve in Sudbury and on Manitoulin Island in Northern Ontario. All film was then transferred to video. The first cut of the film was done on video before selected takes were actually printed and cut together on 70mm stock.

Stereo Laser Fantasies

by Don Marren

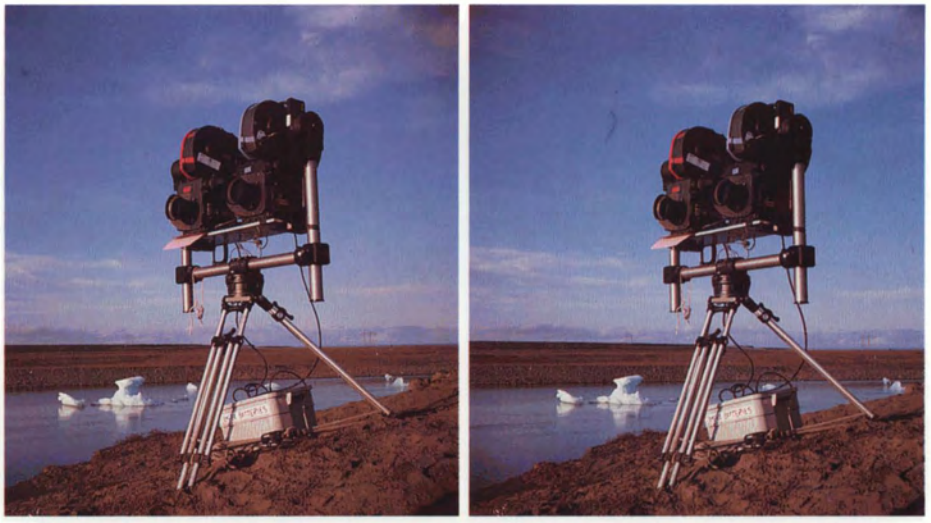
How do we perceive entire laser images, when all that exists is a rapidly moving laser beam? "It's all in the mind," says Robert Mueller, art director at Laser Fantasy International (LFI) in Bellevue, Washington, the company that created the laser imagery for *Shooting Star*. "The beam terminating on the screen surface is reflected back to our eyes as a very intense point of light, like the burning end of a sparkler." Mueller goes on to explain that anyone can create a floating circle of light in the dark with just a sparkler, by drawing a circular pattern of light in the air over and over several times a second. "Now, imagine being able to draw a 1750 point connect-the-dot picture 20 times a second with that sparkler, and you've basically got a laser image. The process of 2-D or 3-D laser projection is based on the phenomenon of persistence of vision. We have 256 intensity levels each for red, green and blue, giving us a total of 16.7 million colors from which to choose 35,000 times every second."

To understand the mechanics of LFI's art form, it is necessary to start with the key ingredients of laser projection

This is the first 3-D movie in north America to incorporate 3-D laser animation (see separate story). The technical wizardry was designed, produced and animated by Laser Fantasy International in Bellvue, Washington, the leaders in this field.

Close to four minutes of 3-D laser animation are utilized throughout the 30-minute length of *Shooting Star*. The technology is generally employed as special effects when the grandfather conjures up images of ancient life forms or invokes the powers of his granddaughter's imagination. "The use of 3-D lasers is not a gimmick," says Lickley. "Within the context of our film, it makes perfect sense to use free-floating 3-D laser images."

Anticipating where lasers were to be used posed no problem for Archambault. "When the rock paintings in a cave come to life as laser images, all I had to do was set the convergence of the shot to leave enough room for the lasers to come forward from the screen. It was something I've never had to do before because I never really found pulling convergence useful, but in this case it was necessary. We would start with a regular shot with the characters and pull convergence, pushing everything back into the screen to allow the laser images to come off the rock and move around in space."



The CP-65 cameras on the Shooting Star *hyperstereo rig, set at a separation of about 30 inches. (Stereo by Noel Archambault.)*

The climax of *Shooting Star* features 3-D computer animation by Santa Barbara Studios in California – and it is nothing short of spectacular. After a shower of small meteorites, a huge meteorite 2.5 miles in diameter floats towards the audience and gradually slides below the screen edge. We follow its path towards Earth until a huge ball of fire streaks towards the camera and explodes in our face. The meteorite has hit Earth, and with more computer animation we see the formation of what has become the mineral-rich Sudbury Basin of today. Adding more realism to this explosive moment is the use of special low-frequency sound effects which literally vibrate the auditorium's seats (shades of Sensurround?). Director Lickley's sense of theatrics – and showmanship – even includes illuminating a large number of objects in the auditorium (everything from a dinosaur skeleton to an actual meteorite from the Smithsonian Institution) during the film. These effects do not interfere with the film itself.

The 300-seat Cavern Theater, where *Shooting Star* is presented, is just as unique as the film. The exhibit entrance into Science North is a long tunnel blasted through solid rock. The auditorium with its 33-foot high rock walls is at the end of the tunnel. This atmosphere creates the right mood

– two small oscillating mirrors, a beam of laser light and a screen. The first mirror oscillates from side to side in the horizontal (X) axis. The oncoming laser beam reflecting off this mirror then strikes a second mirror, which oscillates up and down in the vertical (Y) axis. It is the individual movements of these mirrors which can position the laser beam anywhere on the screen surface. Nearly 35,000 individual XY coordinates every second are sent to these mirrors via scanners which steer the beam to specific destinations.

3-D laser images are slightly different than 2-D laser images, which are basically connect-the-dot drawings. "For 3-D, a Z coordinate is added," says Mueller. "This coordinate is not drawn by the scanners, which only receive X and Y information; however, these XY coordinates are *altered* by the computer based on Z when we apply rotation, scaling, positioning, perspective,or depth-cuing functions to the image. 3-D functions require the Z component in their calculations."

Although 3-D laser graphics can be created three different ways, LFI's primary technique involves first drawing multiple views of the object and then digitizing the information into the computer as 3-D coordinates. Using real-time functions within the company's computer software system, the finished object can be viewed from any angle, and an entire scene can be generated simply by setting up a path for the object to follow. This path manipulates the object's position, scale and rotation angles without the necessity of drawing and digitizing new frames of animation.

To scan 3-D imagery, two polarized images are required, a left and a right view. The XYZ data sent out

Shooting Star *First Camera Assistant Perry Hoffman with the Hines rig at Vatnajokull Glacier in Iceland. In this sequence, time-lapse photography reveals a dynamic landscape with clouds forming and disappearing above the ice field while a 3-D animated laser ride through a twisting mine shaft thrusts the audience 18,000 years into the past at the peak of the last great ice age.*

for the story about the meteorite that unfolds on the large 19 x 42 foot screen.

Lickley reports that new exhibits were added and older exhibits were altered to tie in with the film's theme. In a special display area, the center is even exhibiting slides and stills which help to explain old and new 3-D technology. "We've linked everything together in an interesting and informative way," he says proudly.

Science North is widely acclaimed for its innovative approach to science and education, and is considered to be one of the top science centers in the world. It is northern Ontario's chief tourist attraction, drawing over 1.4 million visitors since it opened in 1984. Over 40,000 schoolchildren visit the facilities each year in organized tour groups. Royalty, too, continues to play an important part in its history. Queen Elizabeth II officially opened the center. Last year Prince Charles and Diana, the Princess of Wales, were so impressed with the center they arranged for their sons Princes William and Harry, who were in Toronto at the time, to make an unofficial visit the next day.

Shooting Star is set for a five-year run at Science North, the first year being the exclusive Canadian showing. "We'd like to see this film shown in as many places as we can," says Lickley. "There are a lot of untapped opportunities in the 3-D world. Some of those 15-year-old films still running in science centers and theme parks need to be replaced to keep interest in 3-D alive. It's really an impoverished market, especially when you see so much 3-D junk being made."

Like *Wilderness*, *Shooting Star* will eventually find homes in Toronto's Ontario Place and at Parc Asterix in France. Lickley is actively seeking distribution of his film throughout the world.

In Sudbury, *Shooting Star* will be shown up to 10 times a day during peak tourist season. Three or four of these showings will be in French. (The on-camera dialog was filmed in both English and French.)

Sudbury is only a four-hour drive from Toronto; flying time is about one hour. The city has a population of about 89,000 and last year it was chosen by *Chatelaine*, a national Canadian magazine, as one of the 10 best Canadian cities in which to live.

For more information about the center and the Sudbury area, write to Science North, 100 Ramsey Lake

from the computer is all that's necessary to create these two views. However, this data, before continuing on to the laser projector, passes through another key piece of hardware called the Realtime Stereo 3-D Processor (RS3DP). This device uses the XYZ data to create the new left and right XY coordinates as fast as the computer can feed them. The new coordinates then pass to two independent scanner sets which are precisely registered to each other on the screen surface.

In order to remain compatible with 3-D film, the laser beams

A 3-D laser projection somewhat more abstract than those used in Shooting Star, *this image is from* Realm of Light, *a laser show produced by LFI for the Granada Studios Tour 1991 season. In the animated production, the effect is like "flying through" this landscape of light.*

Rd., Sudbury, Ont. P3E 5S9, Canada. Telephone: (705) 522-3701. Fax: (705) 522-4954.

A 3-D Safari in Poitiers

Almost every film format imaginable is showcased at Futuroscope – The European Park of The Image – in Poitiers, France. Here you'll enjoy Showscan films, a 360-degree CircoRama presentation, IMAX, OMNIMAX, a Dynamic Motion theater, the world's first permanent IMAX MAGIC CARPET theater (one IMAX screen in front of the audience and one below), and many more high-tech formats, including 35mm/70mm 3-D at Le Cinema en Relief. (This park would be the perfect home for the world's first permanent IMAX SOLIDO theater.)

But what is Futuroscope? It can best be described as a theme park which explores images. Major communication and science facilities, including a huge teleport, are located on the premises along with a French high school/university for students who wish to master the techniques of data processing. Although Futuroscope is geared to education, visitors will still have lots of fun. Everyone will enjoy the many novel forms of communication technology. All the films have an educational component, but are geared to stimulate the mind in an entertaining way.

3-D Safari, which cost about $1.1 million (U.S.) is one of the few films that was produced especially for the park. Presently, most of the films are pickups from recent world expositions and from other science centers around the world. *Sea Dreams* had been presented in the 3-D theater until this past spring when *3-D Safari* opened.

A zebra carcass in the Chyulu Hills of Kenya, where much of 3-D Safari *was filmed. (Stereo by Noel Archambault.)*

For this film Archambault wears two hats, one as stereographer, the other as director of photography. It's his first time at the helm as director of photography, a position that gave him personal satisfaction. "In future films, I would like to move away from the technical aspects of film-making as a stereographer and concentrate on the esthetics of film-making as a director of photography. Both positions do give you complete control, but it's the use of the medium that's of primary interest to me right now." For *3-D Safari*, Archambault counted on the support of Cam North, his first camera assistant, to perform many of the functions that he himself used to do. "I hope to train more and more people in 3-D if the medium is ever going to grow," says Archambault. Another Canadian who assisted Archambault was gaffer David Moxness.

Safari was shot using Panaflex 35mm cameras and the same type of Stereocam rig that was used in *Shooting Star*. It was filmed in full-frame Super 35mm without a soundtrack (the sound is on a separate 8-track tape). Archambault

feeding these two scanner sets are polarized to match standard 3-D glasses. A standard silver screen maintains the beams' polarities as the light is reflected back to the audience. "Existing glasses and screens used for 3-D film work equally well for the new medium of 3-D laser projection," reports Mueller. "True three-dimensional objects of incredible colors, vibrancy and beauty can be placed anywhere in the space before the audience, from horizon-stretching distances to within a nose-length of impact. Most importantly, these images can be matched to 3-D film, existing within any scene or interacting with any character."

The actual signals used to drive the laser projection for *Shooting Star* ultimately play back from a 16-channel audio source which is separate from the film's actual 16-track sound system. This playback medium tracks the SMPTE Time Code sent from the film projector, so no computers or RS3DPs are necessary on site once the mastering of the laser imagery to audio tape is complete.

Shooting Star is the first 3-D movie in North America to incorporate 3-D laser animation. LFI has already been involved in two other twin 3-D 70mm format films in Japan. They are *Journey Into the Fourth Dimension* at the Time Machine of Dreams Theater in Sanrio Puroland in Tama City, and *Journey Into Nature* at a theater of the same name in Oita Harmonyland on Kyushu Island. Other current LFI installments include *Fire and Light*, a 3-D laser program which precedes a 3-D film at "The Wonderful World of 3-D" at Granada Studios Tour in Manchester, England, and the 3-D laser attraction *Mystic Loon*, at Ontario Place in Toronto, Canada.

admits that the 35mm film was a learning experience in tailoring it for a smaller format after being involved with so many big-screen IMAX films. "IMAX 3-D is still the best format, but there is a place for small formats. If you don't have a huge theater, 35mm 3-D is the ideal choice. There are a lot of 3-D theaters around the world right now and many of them are only equipped to show smaller formats."

The 20-minute film tells the story of a young Parisian boy whose parents send him on a one-week trip to a wilderness ranch in Kenya. The boy seems indifferent about the trip itself but does express interest in seeing lions and being close to them. Director/writer Marc Sator takes the viewers on a spectacular safari that is fraught with danger. We watch the boy learn to appreciate and respect the animal world, and eventually see his dream realized. The relatively simple story is skillfully shaped by Sator with a series of visually dramatic vignettes and minimum dialog. (The film is being shown in French, but an English language version has been prepared for distribution in other markets.)

Other then having location work postponed two months by the rainy season in Africa, filming progressed smoothly and quickly for a project of this scope. Filming started in January of 1992 and lasted for over a month. Studio shots and lab work were done in Paris. The film was completed on schedule for its May opening.

The 3-D Safari *StereoCam rig with its paired 35mm movie cameras resting like some strange beast on the savanna, Masai Mara, Kenya. (Photo by Cam North.)*

This was the first 3-D film for director Sator, producer Patrick Besenval and Bakelite Productions. Sator and Besenval worked together on *Un Tour de France*, a 360-degree CircoRama presentation currently being shown at Futuroscope. Another CircoRama collaboration, *Andalusia*, premiered at Expo 92 in Seville.

Le Cinema en Relief, where *3-D Safari* is shown, has about 500 seats. The screen is 36 x 27 feet, and screen-to-projector distance is about 90 feet. The front row is about 33 feet from the screen and the middle row is about 64 feet back.

Futuroscope opened in 1987. It is primarily funded by the French government, with additional support from other European countries, the Poitiers region and the private sector. This article wouldn't be complete unless we mentioned the audacious architectural designs of the pavilions and buildings that house the exhibits and films. Giant spheres, multi-bladed structures and a giant quartz crystal (the IMAX theater) are among the spectacular visual treats.

The facility is located between Paris and Lyon and to the west of both cities. The Roman art found in the area, including innumerable historical and archeological treasures are "musts" for sightseers. Poitiers is a 90-minute ride by TGV (Very Rapid Train) from Paris and only a 10-minute drive from Biard Airport. It is open from March through November.

For information write to: FUTUROSCOPE, 45, rue de Bellechasse, 75007 Paris, France. Telephone: (1) 47.53.86.27. Fax: (1) 47.53.72.40.

A wart hog in Kenya. The African landscape offered the 35mm 3-D cameras an opportunity to film animals in their natural habitat. A hot air balloon sequence includes a breathtaking ride over jungles and plains with a thrilling silent descent into the midst of a variety of surprised animals. (Stereo by Noel Archambault.)

A LISTING OF COMING EVENTS

Calendar

October 23-25 (OH)
The Daguerreian Society's 4th Annual Symposium on the art, history and science of the Daguerreotype, Ohio State University, Columbus, OH. Lectures, trade fair, exhibits, banquet. Contact Professor Clyde Dilley, Department of Photography, Ohio State University, 156 W. 19th Ave., Columbus, OH 43210.

October 24 (TX)
NSA SOUTH CENTRAL REGION FALL MEETING, 10 am to 3 pm, Convention Center, 1300 Geo Bush Dr., College Station, TX. Contact Carroll Bell, Box 9162, College Station, TX 77842. Call 409-693-7004 days.

October 24-25 (CA)
Western Photographic Collectors Association 24th Fall Trade Show & Exhibitiion of Photographica, Pasadena Center, 300 E. Green St., Pasadena, CA. Contact WPCA, PO Box 4294, Whittier, CA 90607. Call 310-693-8421.

October 25 (CA)
Culver City Camera Show & Sale, Vetrans Memorial Auditorium, Culver City, CA. Contact Anton at Bargain Camera Shows, PO Box 5352. Santa monica, CA 90409. Call 310-396-9463.

October 31 (MD)
Washington D.C. Photorama USA Camera Show & Sale, Holiday Inn, Lanham, MD. Contact Photorama USA, 20219 Mack Ave., Grosse Pointe Woods, MI 48236. Call 313-884-2242.

October 31- November 1 (MA)
The Boston Show - Photographica 92. 38th show and sale sponsored by the Photographic Historical Society of New England. Hillcrest Exposition Center, 220 Bear Hill Rd., Waltham, MA. Contact PHSNE, c/o Jack Naylor, Box 189, West Newton, MA 02165. Call 617-731-6603.

November 1 (Ontario)
NSA CANADIAN REGION, FALL MEETING, 1:30 to 4:30 pm at the home of Bob Dynes, 70 Galbraith Drive, Stoney Creek, Ontario. Contact Martin Bass, 519-472-1773.

November 1 (CA)
Pasadena Camera Show & Sale, Pasadena Elks Lodge, 400 W. Colorado Blvd., Pasadena, CA. Contact Anton at Bargain Camera Shows, PO Box 5352. Santa monica, CA 90409. Call 310-396-9463.

November 3-5 (Quebec)
The 1992 International Conference on Three Dimensional Media Technology (3Dmt) will take place at Le Centre Sheraton Hotel in Montreal, Canada. Conference topics will include 3-D Film and Video systems, Stereoscopic Computer Graphics, Virtual Reality, Holography, 3-D Multi-Media, and 3-D Theory and Research. Exhibits, demonstrations and previews of 3-D media systems will occur over all three days of the conference. Contact 3Dmt'92, 7141 Sherbrooke St. West, Montreal, Quebec H4B 1R6, Canada. Phone: 514-848-2539. Fax: 514-848-3492.

November 7 (WI)
Milwaukee Camera Show & Sale, Holiday Inn-Airport, Milwaukee, WI. Contact Bill Moritz, 815-886-0101 or Fantastic Photo Flea Market, 20219 Mack Ave., Grosse Pointe Woods, MI 48236. Call 313-884-2242.

November 8 Quebec
9th Photographic Flea Market, Holiday Inn Montreal Pointe Claire, Pointe Claire, Quebec. Contact Robert Tucci, 1062 Chemin des Vieux Moulins, L'Acadie, Quebec J0J 1H0. Call 514-346-9614.

November 8 (IL)
Chicago Fantastic Camera Show, Westin Hotel O'Hare, 6100 River Road, Rosemont, IL. Contact Bill Moritz, 815-886-0101 or Fantastic Photo Flea Market, 20219 Mack Ave., Grosse Pointe Woods, MI 48236. Call 313-884-2242.

November 8 (NJ)
Second Sunday Camera Show, Firemans Hall, Parish Drive, Wayne, NJ. Contact Second Sunday Camera Show, 25 Leary Ave., Bloomingdale, NJ 07403. Call 201-838-4301.

November 8 (AZ)
Tucson Arizona Camera Show, Shrine Temple, 450 S. Tucson Blvd., Tucson, AZ Contact Photographic Collectors of Tucson, Box 18646, Tucson, AZ 85731. Call 602-721-0478.

November 14 (MI)
Grand Rapids Camera & Computer Show & Sale, Disabled American Vetrans Hall, 4809 Eastern Ave. SE, Kentwood, MI. Contact Photorama USA, 20219 Mack Ave., Grosse Pointe Woods, MI 48236. Call 313-884-2242.

November 15 (MI)
Detroit Super Used Camera Show, Northfield Hilton, Troy, MI. Contact Photorama USA, 20219 Mack Ave., Grosse Pointe Woods, MI 48236. Call 313-884-2242.

November 15 (CA)
Buena Park Camera Swap Meet, Sequoia Club, 7530 Orangethorpe Ave., Buena park, CA. Call 714-786-6644 or 786-8183.

November 21 (CA)
Oxnard Camera Show & Sale, Oxnard Community Center, Oxnard, CA. Contact Anton at Bargain Camera Shows, PO Box 5352. Santa monica, CA 90409. Call 310-396-9463.

November 21 (KS)
Kansas City Camera Show & Sale, Howard Johnson Lodge, Lenexa, KS. Contact Photorama USA, 20219 Mack Ave., Grosse Pointe Woods, MI 48236. Call 313-884-2242.

November 22 (MA)
NSA NEW ENGLAND REGION FALL MEETING, Memorial Library, Oak St. at Edgell Rd., Framingham, MA, 12:30 pm. Mini trade fair, show & tell, auction, stereo projection program and workshop. Featured presentation is *The Valley of Long Ago* by Paul milligan, a stereo essay on the Canyon de Chelly in northeastern Arizona. Contact David Berenson, 32 Colwell Ave., Brighton, MA 02135. Call 617-254-1565 eves.

November 22 (CA)
3rd Marin Camera Show & Sale, Holiday Inn, 1010 Northgate Dr., San Rafael, CA. Contact Carney & Co., 231 Market Place, Ste. 379, San Ramon, CA 94583. Call 510-828-1797.

November 22 (CA)
Long Beach Camera Show & Sale, "round toewr" Holiday Inn, 2640 Lakewood Blvd., Long Beach, CA. Contact Anton at Bargain Camera Shows, PO Box 5352. Santa monica, CA 90409. Call 310-396-9463.

November 22 (IL)
Chicagoland's Camera & Photo Show, Holiday Inn, Itaska, IL. Contact Chicagoland, Box 761, Grayslake, IL 60030. Call 708-223-5190.

December 5 (AL)
Birmingham Fantastic Photo Flea Market, Fort Walter J. Hanna Armory, Birmingham, AL. Fantastic Photo Flea Market, 20219 Mack Ave., Grosse Pointe Woods, MI 48236. Call 313-884-2242.

December 6 (CA)
Hayward Camera Show & Sale, Centennial Hall, 22292 Foothill Blvd., Hayward, CA. Contact Carney & Co., 231 Market Place, Ste. 379, San Ramon, CA 94583. Call 510-828-1797.

January 3 (OH)
The Columbus, Ohio Paper Fair, including stereoviews, photos, postcards, posters, etc., Veterans Memorial Convention Center, 300 West Broad St., Columbus, OH. Contact Columbus Productions, 3280 Riverside Dr., Suite 18, Columbus, OH 43221. Call 614-459-7469.

January 24 (CA)
NSA REGIONAL MEETING (HELP PLAN THE 1993 NSA NATIONAL CONVENTION) Town & Country Resort, San Diego (Mission Valley) CA. 12 Noon to 4 pm. Formulate committees for NSA Convention organizing. Informal show-and-tell, swap and talk. Contact Ken Wright, 619-544-8558 days, 262-2940 eves.

Upcoming National NSA Conventions

1993 (New Date)
San Diego, CA Aug. 6-8

1994
Milwaukee, WI June 17-19

BUY, SELL, OR TRADE IT HERE

Classified

For Sale

3-D CATALOG. Super rare, ultra-cool anaglyphic posters created by award-winning Apartment 3-D. Unlike anything you've seen! $1.00 for 12 page catalog. Apartment 3-D, 1009 S. Berry Rd., St. Louis, MO 63122.

3-D VIEW-MASTER REELS: 70 titles to choose from. Bible characters, National Parks, Foreign Countries, Wild Animals & more. Some custom made selections. Christian & Scenic Pub., R. 8, Dept SW, Bloomfield, IA 52537.

EARLY 1900s NUDES in 3-D! Nine quality reproduced Realist slides only $18. A fraction of the cost of the originals! Famous 3-D Dreams Bathing Beauties catalog is always free! 3-D Dreams, Box 1441, Orem, UT 84059-1441.

ED ROMNEY'S well known Stereo Realist repair manual is still available for $18 plus $4 shipping. VISA or MasterCard OK. Romney Photo, Box 96S, Emlenton, PA 16373. (Keep this address, we seldom advertise!)

HOLOGRAMS by internationally recognized artist. These beautiful, large (12" x 16") art works are visible in sunlight or halogen, perfect for display. Incredible stereoscopy and good investment. Prices from $850. For details, please call Bruce Evans (519) 538-1102.

ILLOCA I, 2nd version European format (7 perf) stereo camera in near mint condition with case, $300. Cleaned, lubricated in June, 1992. J.S. Holt, 1716 So. Louisiana St., Little Rock, AR 72206, (501) 372-4361.

JOHN WALDSMITH'S "Stereo Views, An Illustrated History and Price Guide" available signed from the author, $22.95 softbound or $34.95 hardbound, add $2.95 postage and handling. MasterCard and VISA accepted. John Waldsmith, PO Box 191, Sycamore, OH 44882.

LIGHTED stereo slide viewer: $35, f/3.5, 1/200 lens, shutter plate for Revere or Wollensak: $45. Wood trays for stereo slides: $5 each. 50 LA or Cal. Realist slides: $35, excellent. Art Faner, #101, 1961 Center, Salem, OR 97301.

LOST IN SPACE View-Master 3-reel packet, reels are mint–, booklet missing, tear in outer envelope but no pieces missing, $35 postpaid. Over 100 Sawyer's single View-Master reels, most hand lettered, SASE for new list of reels and 3-D equipment. Mark Willke, 200 SW 89th Ave., Portland, OR 97225. (503) 297-7653.

NIMSLO ACCESSORY LENSES: Close-up & infinity focus - from StereoType, PO Box 1637, Florence, OR 97439. Price including postage: $19 USA/Canada. Overseas add $2 surface, $4 air.

Q-VU PRINT MOUNTS simplify mounting stereo views. Sample kit $5, includes mounted view. Black, gray or rainbow $37/100 ppd. Also, KingInn 2¼ x 2¼ viewers and mounts. Q-VU, 817 East 8th, Holtville, CA 92250.

For Sale

REALIST F3.5 CAMERA with case, Mint reconditioned by Zak, $210. Revere 33 camera with case, sunshades, skylights, Mint reconditioned by Jess Powell, $180. TDC Binocular viewer, Mint, $60. Jon (617) 332-5460.

STEREOS, BOOKS, CDVs, cased images, etc. Call or write for free list of "Photographic Items For Sale". Regular bidders in my auction will receive the list. Jeffrey Kraus, 1 Lauren Drive, Gardiner, NY 12525, (914) 255-7913.

THREE DIMENSIONAL NUDES, uncut, u-mount to your format. 24 exposures, approximately 19 slides, $30. Sheer Fantasy Newsletter, sample $.50. $21. yearly sub., 12 issues. The Snap Shoppe, 1871 SW 37th Terrace, Fort Lauderdale, FL 33312.

VIEW-MASTER blister and old style scenics, nature, Disney and children's packets. 40 page catalog containing information about View-Master Collector's Association. Worldwide Slides, Dept. SW, 7427 Washburn, Minneapolis, MN 55423.

VIEW-MASTER VIEWERS: Model B in box, Ex. $25., Model C, light att. in box, Ex. $20., Model C light att. with trans., Ex. $30., Model F in box, Ex. $20. Frank Mayer, 30 Kenville Rd. (869), Buffalo, NY 14215.

Trade

AUSTRALIAN VIEWS and vintage 3-D comics wanted to trade for U.S. views (or cash). Wide range available. All letters answered. Warren Smythe, 258 Cumberland Rd., Auburn, NSW 2144 Australia.

Wanted

BRITT AND HELLER. Any images by Peter Britt or Louis Heller. Mautz, PO Box 9, Brownsville, CA 95919.

CENTRAL PACIFIC RAILROAD stereographs (also Union Pacific): Alfred A. Hart, C.E. Watkins, A.J. Russell, Houseworth, Savage, Muybridge, Pond, Reilly & others. Dr. James Winter, 15145 Mulholland Drive, Los Angeles, CA 90077, (818) 784-0619, Fax (818) 784-1039.

As part of their membership, NSA members are offered free use of classified advertising. Members may use 100 words per year, divided into three ads with a maximum of 35 words per ad. Additional words and additional ads may be inserted at the rate of 20¢ per word. Please include payments with ads. We cannot provide billings. Deadline is the first day of the month preceding publication date. Send ads to the National Stereoscopic Association, P.O. Box 14801, Columbus, OH 43214, or call (419) 927, 2930. A rate sheet for display ads is available upon request. (Please send SASE.)

Wanted

CENTRAL PARK, NY - Prospect Park, Brooklyn: All stereo views, photos, 1850-1930. Herbert Mitchell, 601 W. 113th St., Apt. 8-H, New York, NY 10025, (212) 932-8667.

COLLECT, TRADE, BUY & SELL: 19th Century images (Cased, stereo, Cdv, Cabinet & large paper). Bill Lee, 8658 S. Gladiator Way, Sandy, UT 84094. Specialties: Western, Locomotives, photographers, Indians, Mining, J. Carbutt, Expeditions, Ships, Utah & Occupational.

COLORADO STEREO VIEWS, cabinets, CDVs, large photographs, real photo postcards, glass negatives, albims, books with real photos as illustrations. Specialties: Locomotives, trains, towns, street scenes, mining, occupational & expeditions. David S. Digerness, 4953 Perry St., Denver, CO 80212-2630.

CONTURA STEREO CAMERA or pre-1900 bellows stereo cameras. Dave Gorski, 244 Cutler St., Waukesha, WI. 53186 or eves. (414) 542-3069.EDMUND L. WILSON, Photographs in all formats. Also issues of *Philadelphia Photographer*, any publication with Wilson as author or editor. Buy or trade. James Jensen, 1320 Noyes, Evanston, IL 60201.

FLORIDA STEREOS of historical value, especially Tallahassee, Tampa and Gainesville. Price and describe or send on approval, highest prices paid for pre-1890 views. No St.Augustine. Hendriksen, PO Box 21153, Kennedy Space Center, FL 32815.

FOR COPYING: Miners' Bank, Pottsville, PA., 1860s-1870s views. Herbert Mitchell, 601 W. 113th St., Apt. 8-H, New York, NY 10025, (212) 932-8667.

HANOVER, PA stereo views. Any views by P.S. and H.E. Weaver or C.J. Tyson of Gettysburg. John Richter, 34 South St., Hanover, PA 17331, (717) 637-7154.

I BUY ARIZONA PHOTOGRAPHS! Stereo views, cabinet cards, mounted photographs, RP post cards, albums and photographs taken before 1920. Also interested in xeroxes of Arizona stereographs and photos for research. Will pay postage and copy costs. Jeremy Rowe, 2331 E. Del Rio Dr., Tempe, AZ 85282.

ILLINOIS AND MISSOURI views of street scenes and identified public buildings wanted to buy or trade. Can use most Illinois views except Chicago. Philip Germann, Box 195, Quincy, IL 62306.

ILOCA 35MM STEREO VIEWER, preferred or other good 7 sprocket, any reasonable condition. Wally Ford, RD2 Box 16, Millbrook, NY 12545, (914) 677-3003.

LOGGING AND TREES, especially Jenny's Michigan Pinery views. Also views of sawmills, logging locomotives, tools and equipment, lumberjacks, big trees, unusual trees, stump pullers, bonsai. Dennis Worst, 3409 Scenic Drive, North Muskegon, MI 49445, (616) 766-2711.

Wanted

MILWAUKEE, WISC. stereo views from any photographer, also regular images, dags, tins or whatever of Milw. street scenes. Dave Gorski, 244 Cutler St., Waukesha, WI. 53186. FAX (414) 542-9730 or call eves. (414) 542-3069.

MOVIE "COMING ATTRACTION" GLASS SLIDES wanted. Send film titles and condition to: Dwight Cleveland, POB 10922, Chicago, IL 60610-0922; (312) 266-9152.

MUYBRIDGE VIEWS. Top prices paid. Also Michigan and Mining – the 3 Ms. Many views available for trade. Leonard Walle, 60 Pinto Lane, Novato, CA 94947.

OCEAN GROVE, NJ, and Ocean Grove Camp Meeting stereo views, by G.W. Pach, Stauffer, Hill, Anthony. Also, any Ocean Grove souvenirs & memorabilia. Jim Lindemuth, 94 Mt. Carmel Way, Ocean Grove, NJ 07756, (908) 755-0035.

REALIST CUSTOM or Belplasca. Dennis Selwa, (619) 274-6431.

SHAKER PHOTOS. All formats. Please send Xerox copy with price to: Richard Brooker, 16 Fishkill Ave., Cold Spring, NY 10516.

Wanted

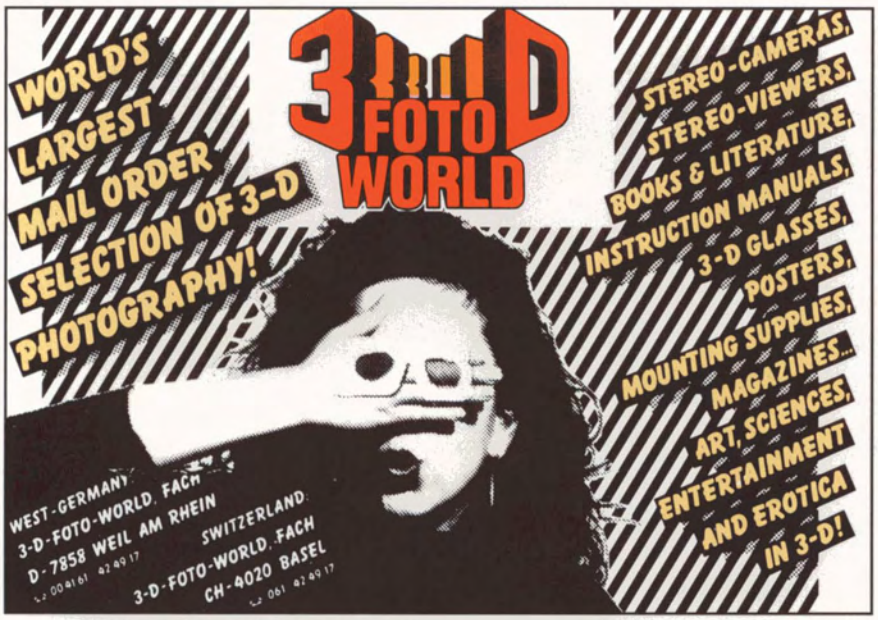
STEREO DAGUERREOTYPES: All kinds, all nations & subjects. Any condition. Ken Appollo, PO Box 241, Rhinecliff, NY 12574, (914) 876-5232.

STEREO VIEWS OF BRITAIN in the following categories: Country houses, occupationals, amateur views, views of famous people and events, and views made anywhere in Leicestershire (including the Anthony group). Contact Tom Rogers, 1111 12th Street, Huntsville, TX 77340.

ULYSSES S. GRANT photographs, any format. Doesn't matter if prominent or in background. Please send Xerox copy with price. I am researching all known photographs. Do you have any? Jim Bultema, 1634 El Verano, Thousand Oaks, CA 91362, (805) 497-8381.

VIEWS FROM ANY OF THE RAUMBILD-VERLAG series, especially the military issues. Also older V-M reels, not cartoons. Send lists. Vance, 5513 Hwy 73-E, Concord, NC 28025.

WEST VIRGINIA stereo views. Views by Anderson, Bishop Bros., W. Chase, Kilburn, Kirk & McGarry among others. Send photocopies and price. Tom Prall, Rt. 3, Box 146, Apt. 6, Buckhannon, WV 26201.


WORLD'S LARGEST MAIL ORDER SELECTION OF 3-D PHOTOGRAPHY!
3D FOTO WORLD
STEREO-CAMERAS, STEREO-VIEWERS, BOOKS & LITERATURE, INSTRUCTION MANUALS, 3-D GLASSES, POSTERS, MOUNTING SUPPLIES, MAGAZINES... ART, SCIENCES, ENTERTAINMENT AND EROTICA IN 3-D!
WEST-GERMANY
3-D-FOTO-WORLD. FACH
D-7858 WEIL AM RHEIN
SWITZERLAND
3-D-FOTO-WORLD. FACH
CH-4020 BASEL

ARCHIVAL SLEEVES: clear 2.5 mil Polypropylene

CDV (3⅜" x 4⅜")	per	100: $7	case of 1000:	$60
CDV POLYESTER (2-mil)	per	100: $10	case of 1000:	$90
POSTCARD (3¾" X 5¾")	per	100: $8	case of 1000:	$70
4"x5"	per	100: $8	case of 1000:	$70
STEREO (3 ¾" x 7")	per	100: $9	case of 1000:	$80
STEREO POLYESTER	per	100: 2-mil	$12 or 3-mil	$16
CABINET (4 ⅜" x 7")	per	100: $10	case of 1000:	$90
5"x7"	per	50: $7	case of 200:	$25
BOUDOIR (5½" x 8½")	per	25: $6	case of 500:	$80
8" x 10"	per	25: $8	case of 200:	$40
11" x 14"	per	10: $8	case of 100:	$45
16" x 20" (unsealed flap)	per	10: $20	case of 100:	$99

Russell Norton, PO Bx 1070, New Haven, Ct 06504-1070
US SHIPPING: $4 per order. Institutional Billing. (1991)

HASSLE-FREE 3-D

WITH THE TECO-NIMSLO CAMERA AND 3-VIEWER

Use the lightweight auto-exposure camera to make:
- 36 Slide pairs
- Close-ups at 3 distances
- Lenticular Prints

Use the Universal viewer to display:
- Realist rollfilm
- Nimslo/Nishika rolls
- Mounted slide pairs

PRICES:
- New camera $145
- Your Nimslo modified..... $63
- Close-up attachments 6", 12", 30" dist's (ea) $29
- Illuminated cutter..... $18
- Eveready case..... $12
- Teco 3-Viewer..... $87

Add $3 shipping per order.
Calif. residents add 7¾% sales tax.

MFD. BY:
TECHNICAL ENTERPRISES
1401 Bonnie Doone
Corona Del Mar, CA 92625
Tel. 714-644-9500

WANTED:

Milwaukee

Stereoviews
Glass Slides
Real Photo PC's

Cary Sternick
11318 Ericston Dr.
Houston, TX 77070
(713) 351-9806 (W)
(713) 320-0277 (H)

"Horned Grebe" J.A. Hurst First Series, No. 16. A view typical of the well designed settings, sharp photography, and careful tinting found in Hurst's work. The story of this taxidermist/stereographer is told in Stuffed & Tinted, the feature by Del Phillips on page 24.